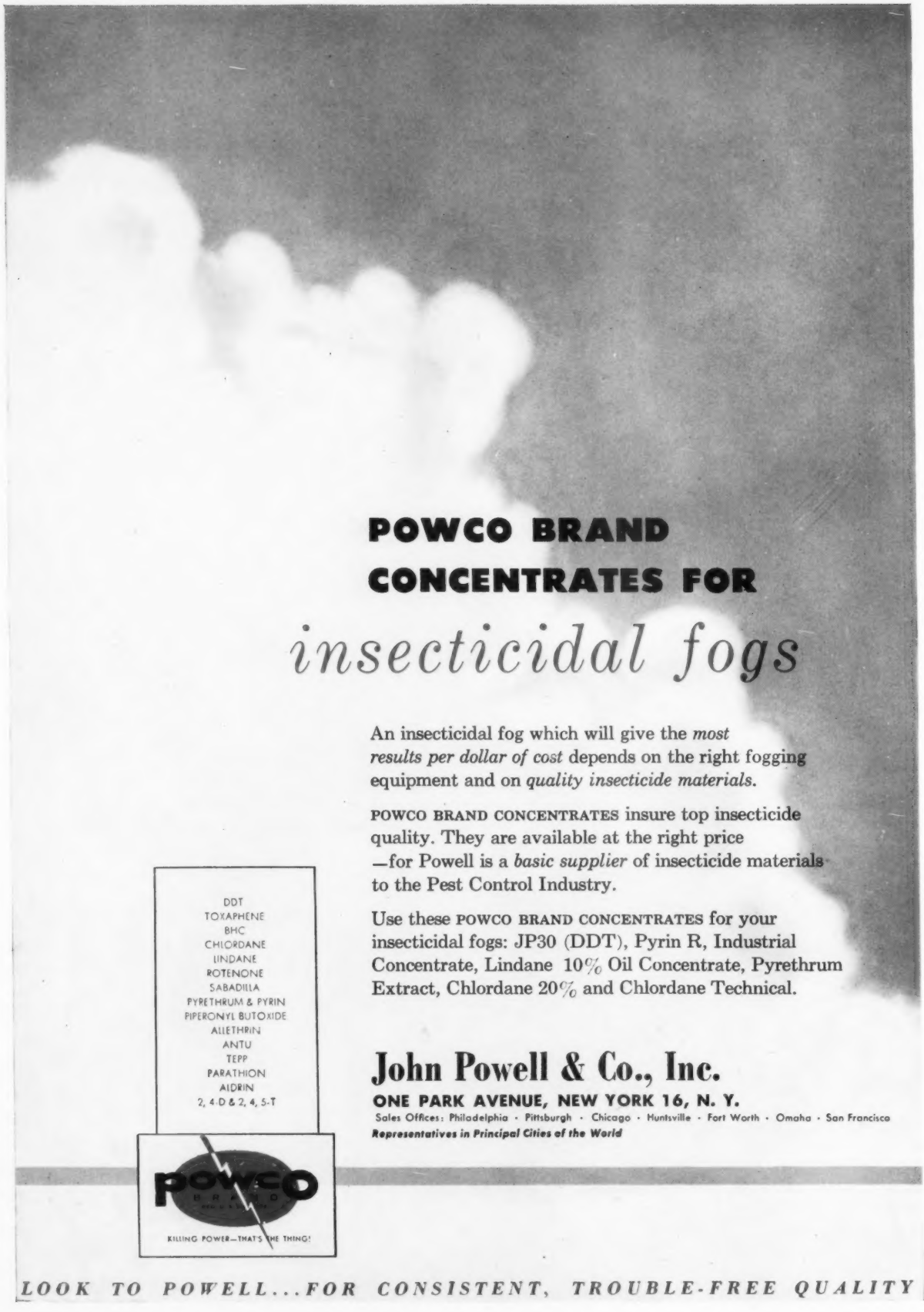
PEST CONTROL

APRIL 1952

EVERY MONTH SINCE 1933

Face to face with an enemy! Enlarged view of a common house fly. Note the sponging sucking mouthparts
Photo courtesy American Museum of Natural History, New York City

Magazine of the Urban and Industrial Pest Control and Sanitation Service Industries for 20 Years



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An insecticidal fog which will give the *most results per dollar of cost* depends on the right fogging equipment and on *quality insecticide materials.*

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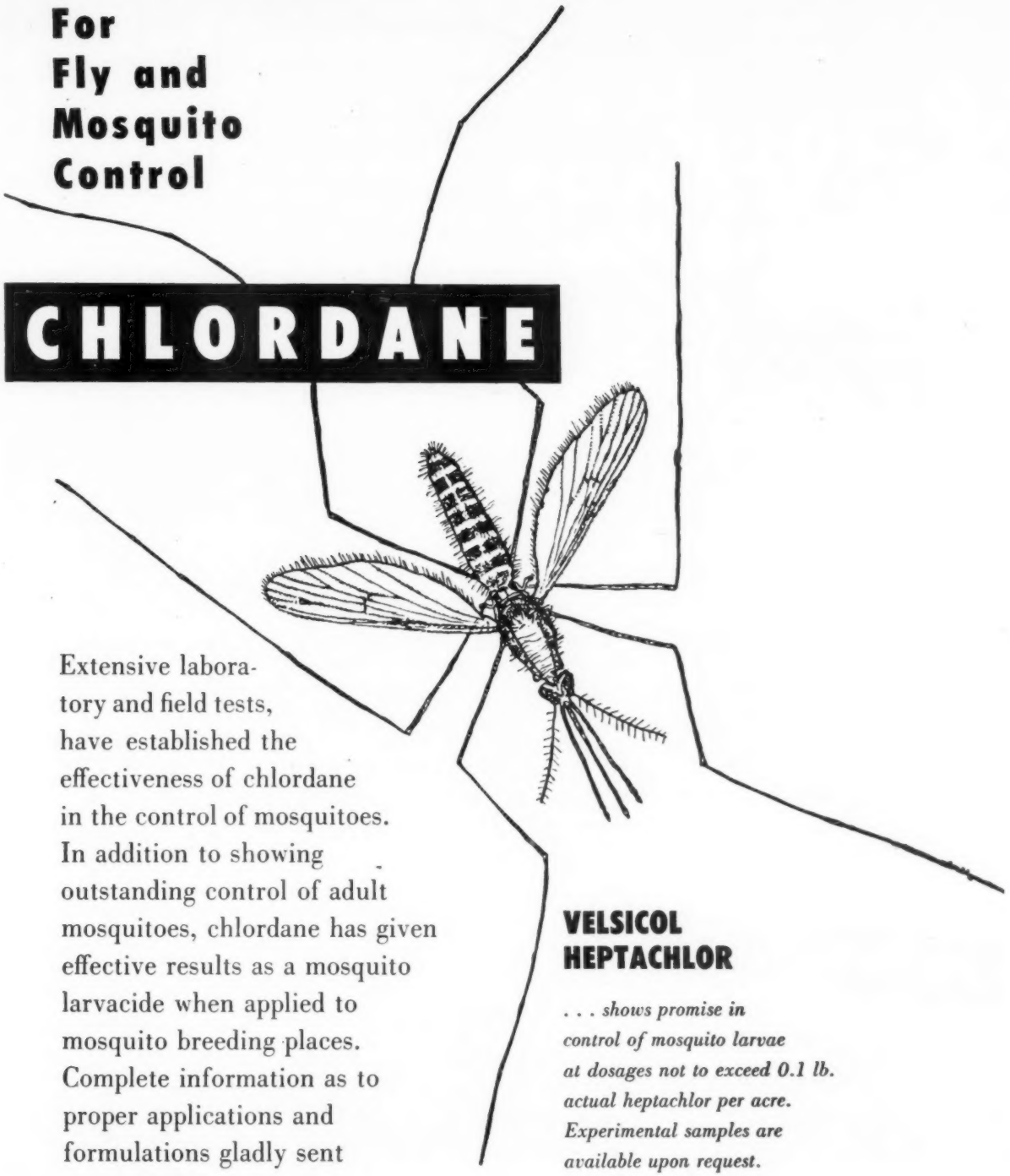
CHLORDANE



Extensive laboratory and field tests, have established the effectiveness of chlordane in the control of mosquitoes. In addition to showing outstanding control of adult mosquitoes, chlordane has given effective results as a mosquito larvacide when applied to mosquito breeding places. Complete information as to proper applications and formulations gladly sent upon request.

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appearance:	transparent, light amber in color
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SULFOXIDE-PYREXCEL is outstanding for the preparation of non-toxic fly sprays, roach sprays, mill sprays, industrial sprays, food packing and bottling plant sprays and for knockdown in residual type sprays.

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Opportunities Unlimited IV

Frankly we don't know how much is spent for fly and mosquito control in this country annually, but it runs into the millions. The U. S. Department of Agriculture estimates these two pests cost $165,000,000 a year in disease, depressed real estate values and food losses.

Many counties and communities have their own abatement programs because they feel they cannot afford to hire industry to do the job. Other civic officials have found their programs are more successful when turned over to pest control operators. We'll not argue the point here. Control of flies and mosquitoes offers opportunities big enough for all.

One set of figures we were able to get hold of reveals over $8,159,322 is spent by municipalities, state and regional governments for mosquito control work annually. This according to a survey made by the American Mosquito Control Association (one worth belonging to, by the way.)

Equipment needed for this work, which primarily involves outside measures, should be available this year because metals set aside for the defense program are partially being diverted into civilian channels. Supply of chemicals is adequate. There is no reason why PCOs, either working with civic programs, or on their own contracts, cannot develop much new business controlling these Diptera, and do so profitably.

James A. Nelson
Editor

PEST CONTROL

EVERY MONTH SINCE 1933

JAMES A. NELSON
Editor

WILLIAM N. TROY
Assistant Editor

KARL HASSLER
West Coast Representative

APRIL, 1952 VOL. 20, NO. 4

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letters

Insecticide Resistant Roaches?

For the past year I have been watching the return of the German roach. They are again being found in the commercial establishments we service. At first, I thought it was simply a matter of inadequate spraying. But later I found roaches in places sprayed heavily with 2% chlordane in an oil base only ten days before. After another spraying, the roaches were back in strong numbers within two weeks.

I then thought we had not mixed our sprays correctly, or that originally they were not of good quality. We took a sample of the old spray and used it on a new roach job. It gave excellent results. We then ordered a new drum of 3% chlordane and used it on our regular service jobs. In these cases roaches were not controlled adequately. Further tests along this same line produced similar results. To be sure, some roaches are being killed. But I am still finding them in spots which have been sprayed heavily.

I have reached the conclusion that we have a breed of German roaches immune to the residual of chlordane. I would like to know if any of your readers have had similar experiences.

W. D. Bedingfield

B & R Exterminating Co.
P. O. Box 2281
Corpus Christi, Texas

Fogging Inadequate For Control Of Wood Beetles

In the February, 1952 issue of *Pest Control*, Mr. John J. O'Connor states that fogging will control powder-post beetles infesting the woodwork of a building. Experiments conducted by myself and a pest control operator, in cooperation with Mr. Frank Steinrock of Todd Shipyards Corp., disprove this with the full agreement and satisfaction of Mr. Steinrock and his company.

There are many other uses for "Tifa" fogging machines where they are quite effective.

Dr. Thomas E. Snyder

Termite Consultant
2801 Adams Mill Road, N. W.
Washington 9, D. C.

More On Grasshopper Emblems

In regard to E. O. Essig's letter in the February, 1952 issue of *Pest Control*, it is interesting to note that the grasshopper sign associated with Thomas Gresham is also used by the Gresham Life Assurance Society and Martins Bank.

A number of other city business houses use insect and animal symbols as a house sign. These symbols may have been used originally as official seals for documents during the Middle Ages. Signatures, at that time, were not legally recognized, since they could easily be forged. Then too, such signs were readily understood by an illiterate population . . .

T. Rowland

Murphy Chemical Co. Ltd.
Wheathampstead, St. Albans, Herts.
England

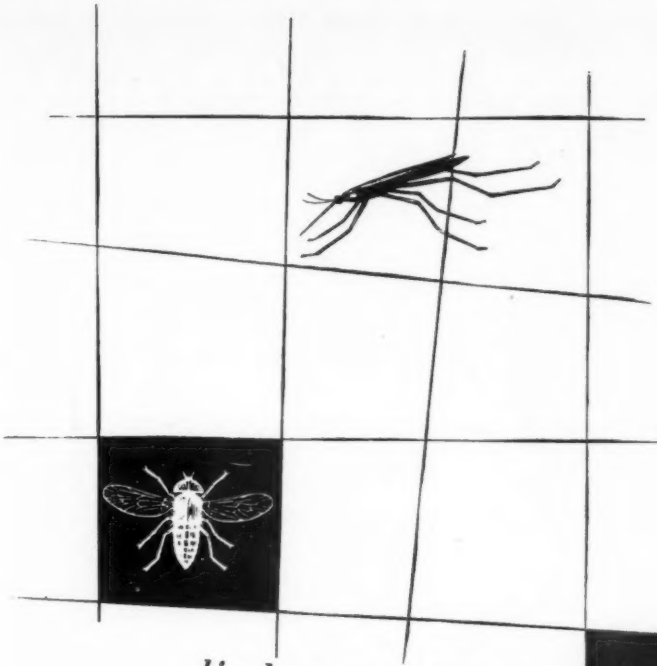
"Secret Formula"

Below appears a facsimile of an advertisement which appeared in The Public Ledger, published in London on August 18, 1761. Unfortunately, there is no record of the "secret formula" which Thomas Tiffin guaranteed as "Harmless to furniture, having no smell, and wholly eradicating all vermin". However, a letter from Mr. S. Farrow of the London Fumigation Co. informs us that there is still a Tiffin Pest Control Co. in England, that it was originally established around 1690 and that it has passed through the same family from generation to generation.

BUGGS[1]
Effectively Destroyed
by Thomas Tiffin
at Wool-Pack and Star, opposite The Pewter-Platter in Cross Street, Hatton Garden.

Having married Mrs. Christian Moriarty, formerly of Leather Lane, the Daughter of George Bridges, and having by a studious appreciation to the said business invented a composition known to none but myself, which entirely amends and takes off all that offensive matter which is used alone by pretenders to this Art; and though my mixture is quite harmless to the piece of furniture, it has no smell and has a much speedier effect in its operation than that most commonly used, and wholly eradicates those vermin, as many hundreds have experienced. There are several pretenders to my art, but I defy them all to know my composition. But cautious! there are other signs like mine, especially my wife's father's, who follows the old way which he taught my wife eighteen years ago, and knows nothing of my mixture, though I know his.

[1]From a service letter of the National Pest Control Association.



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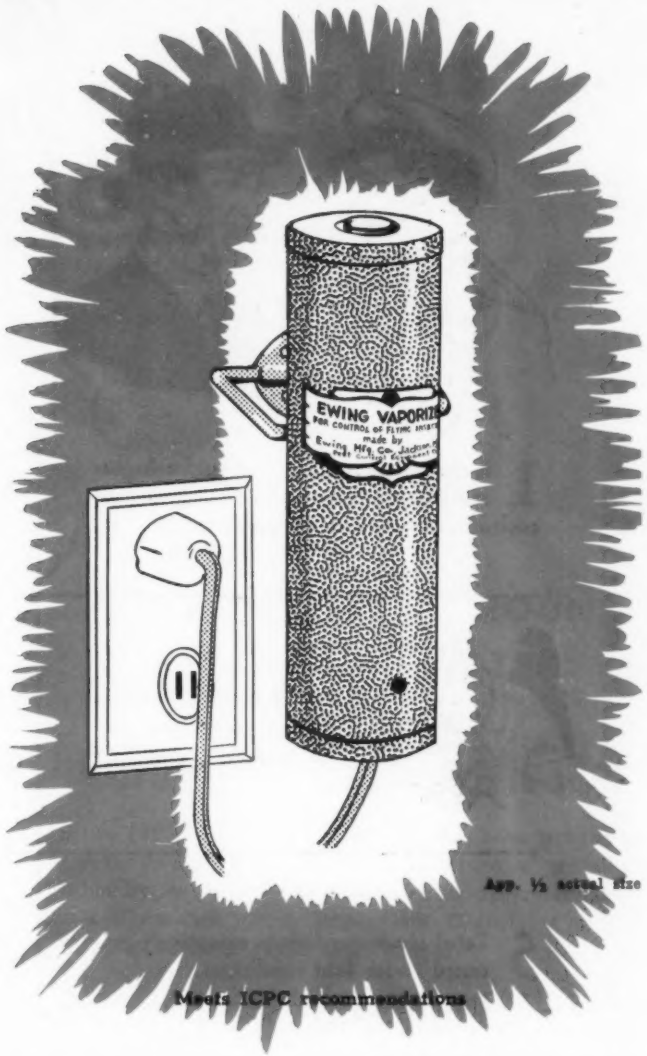
- ✓ Fully guaranteed against defective materials and workmanship.



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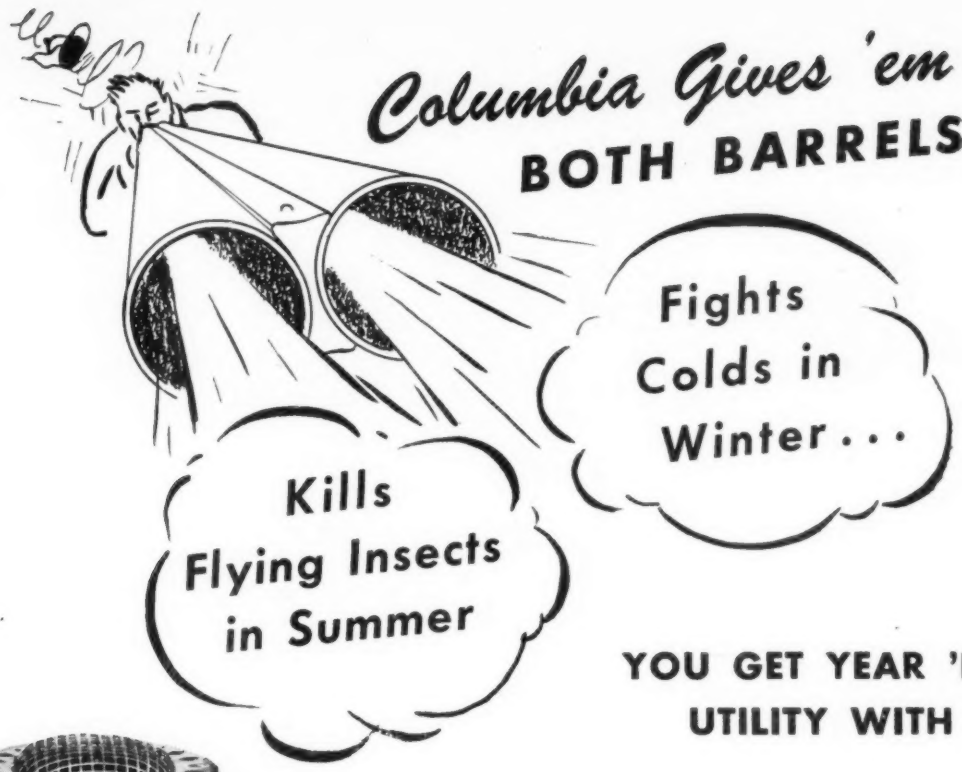

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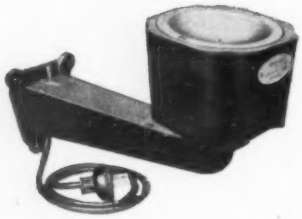

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HARMLESS — ODORLESS

SHU-FLY is harmless to animals and humans. Will not stain walls, furniture, drapes, carpets, etc. Will not leave oily film or streak mirrors, glass or any other surface.

FLY PESTS ARE A REAL DANGER

Flies are filth-spreading, disease-carrying and are a real threat to health and business. SHU-FLY controls house-flies, mosquitoes, gnats, flying moths, silverfish, kelp flies, sugar gnats, fruit flies, mushroom flies, and chicken lice.

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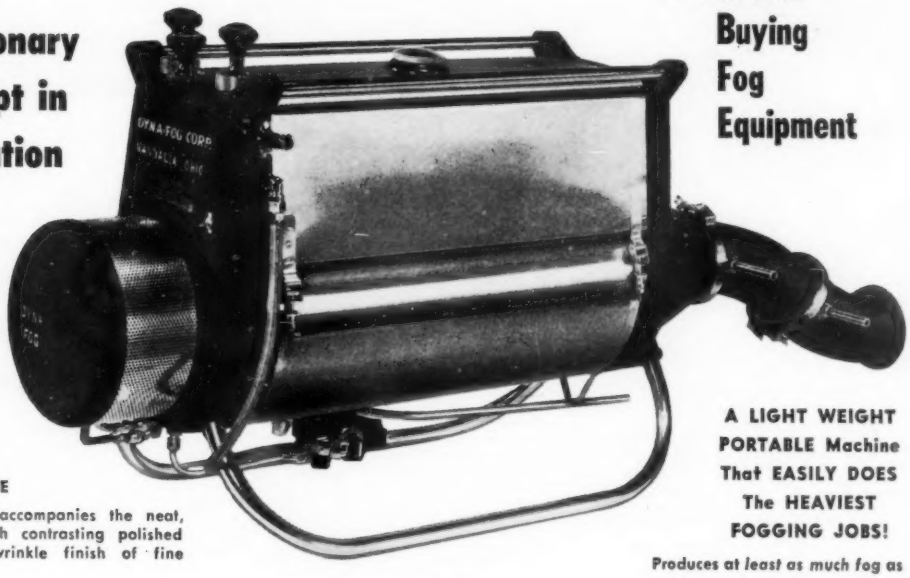

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F.O.B. Vandalia, because easily does every job that old fashioned heavy machines can do. PLUS doing work impossible except with a portable machine.

OPENS NEW FIELDS FOR FOGGING!

LIGHT WEIGHT AND PORTABLE!

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Laboratory tests show extremely dense fog output at rates up to 40 gallons per hour. Analysis of fog shows uniform particle size, assured by exclusive pulsating jet system of operation.

LESS HEAT APPLIED TO INSECTICIDE!

Killing power proven by laboratory test. Jet gases pulsating at sonic velocity pulverize insecticide formulaton with minimum application of heat. Less "breakdown" of insecticide. More kill per formulate dollar.

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insecticide research for the control of

Resistant House Flies

by Dr. RALPH B. MARCH and Dr. ROBERT L. METCALF

Entomologists, Citrus Experiment Station, Division of Entomology University of California, Riverside

SOUTHERN California, because of its subtropical climate which permits nearly year-round breeding of house flies, was one of the first areas of the United States in which this fly developed pronounced insecticide-resistance. DDT was first employed for residual fly control in this area in 1946. However, by the spring of 1948 many complaints regarding its ineffectiveness were received and investigations showed that wild flies from several areas were resistant to knockdown by DDT and to more than 300 times the normal topical LD50 dose of DDT for non-resistant flies. A highly significant degree of resistance was also shown to TDE, methoxychlor and other compounds chemically related to DDT. Field tests were initiated to find a satisfactory substitute for DDT residual sprays, and *gamma*-benzene hexachloride or lindane was quickly demonstrated to be the most satisfactory (March and Metcalf, 1949a). The use of this material became very extensive in 1948, 1949, and 1950. It was to be expected, however, that resistance to this chemical might develop and accordingly close watch was kept on the wild fly populations in treated areas. Such resistance to lindane was first observed during the summer of 1949 and the condition rapidly became general (March and Metcalf, 1949b). Periodic surveys have been continued in various southern California localities for the past several years, and fly resistance has in general shown a steady increase to both DDT and lindane. In most situations, wild house fly populations in this area are now so highly resistant to DDT, TDE, methoxychlor, lindane, chlordane, toxaphene, aldrin, and dieldrin as to make their use impracticable for satisfactory residual control (March and Metcalf, 1950).

New Residuals May Be Answer

On the basis of these and similar experiences during the past few years in many parts of the world, it might appear that the residual application of insecticides for house fly control has little promise for the future. Nevertheless, since we know what can be accomplished with effective residual insecticides in comparison with other control measures, the most feasible solution to this critical problem appears to lie in the development of new residual insecticides against which resistance will not develop, the development of synergists for the present insecticides against which resistance has developed, or the better utilization of such insecticides so as to prevent the build-up of resistance. The necessity for such a solution becomes even more apparent and critical when one considers other arthropods of both medical and agricultural importance which have been effectively controlled only through the use of insecticides, especially the new organic insecticides. Development of resistance is being reported in ever increasing numbers of species but important as these cases may be, the potential development of resistance in the remaining numbers is of even greater importance. It is the purpose of this summary to present the results of certain research along the lines outlined above, and especially of more recent investigations with synergists for DDT.

Investigations Of New Insecticides

Studies of the biochemical mechanisms for the development of resistance have shown that DDT-resistant flies are able to detoxify DDT by dehydrohalogenation to non-toxic compounds such as DDE (2,2-bis - (*p*-chlorophenyl)-1,1-dichloroethylene) in greater amounts and at a considerably more rapid rate than non-resis-

Photo courtesy American Museum of Natural History, New York City.

USE THE SPRAYERS THAT ARE

BUILT TO LAST!

Stainless steel tank, pump, supply tube, oil- and chemical-proof hose. Also available with galvanized steel tank, brass pump. 2¾ or 4 gal. sizes.

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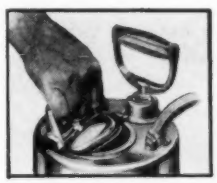

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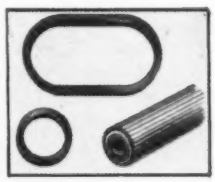

Oil- and Chemical-Proof Hose and gaskets. All brass, machined, non-clogging spray control valve. Four spray discs provided for any spray.

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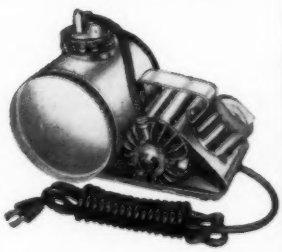

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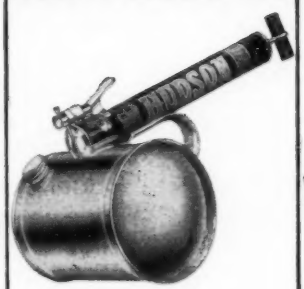

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Compound	24-hr. LD_{50}'s in microg./female fly for following strains: Laboratory	Bellflower	Pollard
Prolan	0.095	0.15	0.11
Bulan	0.15	0.18	0.11
DDT	0.033	11	>100
3456	0.086	--	--
Malathon	0.56	1.2	1.4
Parathion	0.015	0.020	0.023
Pyrethrins	1.0	0.97	1.6
Lindane	0.01	0.08	0.25

Table 1. Topical micro-drop tests showing 24-hour LD50's in microg. per female fly for laboratory, Bellflower and Pollard strains.

tant flies (Sternberg, *et al.* 1950a and 1950b; Perry and Hoskins 1950, 1951a and 1951b; and Winteringham, *et al.* 1951). On the basis of this work as well as studies in our own laboratories, it seemed that analogues of DDT which could not be dehydrohalogenated might be effective against resistant flies. The compounds, Prolan[1] and Bulan[2], although structurally related to DDT, cannot be detoxified by such a dehydrohalogenation mechanism. Studies in the laboratory with these compounds have shown that although they are somewhat less toxic than DDT to non-resistant flies, they are about equally toxic to both non-resistant and resistant flies (see table 1) (March and Metcalf, 1950). Limited field trials with Dilan[3] over a period of two years have shown that satisfactory control of resistant flies for 1 to 2 months can be obtained with residual applications containing 40 pounds of a 50% Dilan wettable powder per 100 gallons of finished spray. Laboratory studies have shown, however, that a field strain of house flies of the DDT-lindane resistance type is rapidly able to develop further resistance to Dilan constituents to as high a level as to DDT (see table 2). Thus resistance would undoubtedly develop in the field if the use of Dilan were to become extensive.

In studying the development of house fly resistance in the laboratory, a number of resistant strains have been selected from susceptible parents by treating successive generations of flies with graded doses of insecticides so that only sufficient survivors remain to propagate the next generation. This has been done by treating either adults or larvae or both and in 20 to 40 generations strains have been selected which are highly resistant to all of the so-called chlorinated hydrocarbon insecticides including DDT, methoxychlor, lindane, toxaphene and chlordane.

No Resistance To Organic Phosphates

None of these resistant strains of flies, however, have shown any appreciable resistance to the organic phosphate insecticides such as TEPP, parathion, or paraoxon. Thus similar studies were undertaken to develop a strain of flies resistant to parathion, but up to the present time this strain shows only a very low order of resistance (7 times) after selection for 60 generations. This low level was reached in 34 generations and has now remained the same through 26 additional generations. See table 2 for a comparison of the selection for resistance with lindane and parathion. This failure to develop resistance, except of a low order, with parathion in this length of time might be very significant. Although one certainly cannot draw any rigid conclusions, it may possibly indicate that house fly resistance to the organic phosphate insecticides will not develop to the same degree, or at least not as rapidly, as has resistance to the chlorinated hydrocarbons.

Compound 3456, Malathon Promising

On the basis of these results, we have been searching for suitable organic phosphates for use in residual applications for house fly control. Two materials, compound 3456[4] and malathon[5] have appeared promising in laboratory tests (see table 1). These two materials, and especially malathon, have considerably less acute toxi-

[1] 1,1-bis-(p-chlorophenyl)-2-nitropropane
[2] 1,1-bis-(p-chlorophenyl)-2-nitrobutane
[3] A proprietary mixture of 3 parts Bulan and 1 part Prolan.
[4] 0,0-diisopropyl-0-p-nitrophenyl thiophosphate
[5] 0,0-dimethyl-S-(1,2-dicarbethoxyethyl)-dithiophosphate

Table 2. Development of resistance in the laboratory. Topical dosage in microg. per fly permitting 20 to 40 per cent survival.

Prolan 1/		Lindane		Parathion		DDT - 5 pts. 1,1-bis-(p-chlorophenyl)-ethane 1 pt. 3/	
Generation	Dosage	Generation	Dosage	Generation	Dosage	Generation	Dosage
Super P=Pollard strain 2/	0.15	P=laboratory strain	0.01	P=laboratory strain	0.01	Bellflower P=1951 Strain 2/	1-DDT
F_1	0.15	F_1	0.01	F_1	0.01	F_1	2.5
F_2	0.2	F_2	0.02	F_2	0.02	F_2	5
F_3	0.5	F_4	0.03	F_3	0.03	F_3	10
F_7	0.7	F_{10}	0.04	F_{15}	0.04	F_4	50
F_8	1.0	F_{14}	0.05	F_{28}	0.05	F_5	100
F_9	2.0	F_{15}	0.06	F_{34}	0.07		
F_{11}	50	F_{26}	0.08	F_{60}	0.07		
F_{12}	>100	F_{29}	0.1				
		F_{33}	0.2				
		F_{34}	1.0				
		F_{35}	10				
		F_{36}	50				
		F_{41}	>100				

1/ 1,1-bis-(p-chlorophenyl)-2-nitropropane

2/ Larvae and adults both treated.

3/ Dosages shown are in terms of DDT and include in addition 1/5 as much synergist.

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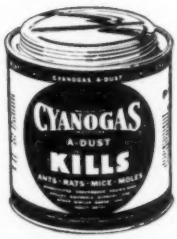

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the most generally used fumigant in the Pest Control industry, simplifies the job of fumigating dwellings, industrial buildings, railroad cars, ships and stored commodities. AERO HCN DISCOIDS are thin cellulosic discs saturated with commercially pure hydrocyanic acid, and are simply scattered from the can. There is no dirt or mess in application or clean-up. DISCOIDS are especially suitable where insects and rodents in enclosed spaces are a problem.

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is unsurpassed for easy, economical fumigation of small storage buildings (not dwellings) needing only low dosages of gas. CYANOGAS G-Fumigant is a dustless, sea-sand size granulation of calcium cyanide, which liberates hydrocyanic acid gas . . . the same positive fumigant but of lower strength than DISCOIDS.

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No.	Synergist	24-hr. % mortalities for following dosages of DDT-synergist combinations in microg./female fly: DDT: Synergist: 50/10	10/2	5/1	2.5/.5	1.25/.25
1	Bis-(p-chlorophenyl)-chloromethane	100	100	100	87.5	67.5
2	1,1-bis-(p-chlorophenyl)-ethane	100	100	100	85	52
3	Bis-(p-chlorophenyl)-ethynyl carbinol	100	98	95	72	48
4	Di-[bis-(p-chlorophenyl)-methyl carbinol]-ether	100	100	90	75	38
5	Bis-(p-chlorobenzyl)-sulfide	100	98	98	62	35
6	1,1-bis-(p-chlorophenyl)-1-chloroethane	98	100	80		
7	Bis-(p-chlorophenyl)-methyl carbinol, methyl ether	100	98	72	48	32
8	Bis-(p-chlorophenyl)-methyl carbinol	100	78	55	48	30
9	Bis-(p-chlorophenyl)-vinyl carbinol	100	90	62	22	18
10	1,1-bis-(p-chlorophenyl)-ethylene	100	92	48	38	8
DDT - 50 microg./female fly		20 ± 12% mortality				
Synergists 10 microg./female fly		<10% mortality				

Table 3. Topical application of graded combinations of DDT and the ten most active synergists in constant ratio of 5 parts to 1 part respectively.

city to laboratory mammals than parathion. Their respective acute oral LD50's to the rat are: compound 3456, 115-120 mg./kg.; malathon, 300; and parathion, 4-15. Preliminary field trials with these two materials have been accomplished, but when used at 0.5 to 4 gallons of a 25 per cent compound 3456 emulsifiable concentrate, or 1 gallon of a 47.7 per cent malathon emulsifiable concentrate per 100 gallons of finished spray, neither gave satisfactory residual control for more than two weeks. Further exploratory field trials are planned, however.

In addition, an intensive search is being made for other compounds of suitable characteristics from a collection of over 4000 organic compounds which have been screened against other pests in our laboratories.

Development Of Synergists

Perry and Hoskins (1950, 1951a and 1951b) have shown that the pyrethrins' synergist, piperonyl cyclonene, is effective in increasing the activity of DDT against resistant house flies. This increase in effectiveness was shown to be due to the inhibition of piperonyl cyclonene of the process of detoxification of DDT. The quantities of piperonyl cyclonene necessary to achieve this synergistic effect, however, are of such magnitude as to eliminate it from consideration for field use. Summerford, *et al.* (1951) showed that the miticide, DMC[6], was the most effective of 11 compounds related to DDT in synergizing DDT against resistant flies. Although it was considerably more effective in this respect than piperonyl cyclonene, limited field tests with a DDT-DMC combination did not appear to give satisfactory residual control.

We have recently studied (March, Metcalf and Lewallen, 1952) more than 100 compounds as synergists for DDT against resistant house flies. The activities of these compounds were evaluated by our standard procedures for the topical application of microdrops (March and Metcalf, 1949a) using groups of twenty 3- to 4-day old adult female flies of the Super Pollard strain. Dosage mortality data for combinations of DDT and the ten most active synergists are given in table 3. Toxicities of these combinations, when used at a ratio of 1 part of synergist to 5 parts of DDT, were 30 to 140 times greater than that of DDT alone. Increasing the ratio of synergist to DDT increased the toxicity of the combination. However, even a 10 to 1 combination of the most active synergist, bis-(*p*-chlorophenyl)-chloromethane and DDT was not as toxic to resistant flies as DDT alone to susceptible flies, although it approached within 10 times this value.

Synergists Decrease DDT Value On Susceptible Flies

Synergistic activity was not confined only to DDT, but was also effected with methoxychlor

[6] Di-(p-chlorophenyl)-methyl carbinol

Synergist	Methoxychlor: 10 / Synergist: 2	5 / 1	2.5 / .5	1.25 / .25	.62 / .12	.31 / .06
1	100	100	100	100	82	32
2	100	98	82	90	72	20
3	100	100	100	100	100	62
Methoxychlor	0.3 microg./female fly			24 ± 13% mortality		
	10 microg./female fly			76 ± 4%		
Synergist	10 microg./female fly			<10%		

Table 4. Topical application of graded combinations of Methoxychlor and synergists in constant ratio of 5 parts to 1 part respectively. 24-hr. % mortalities for following dosages of methoxychlor-synergist combinations in microg./female fly:

Compound	DDT: .05 / Synergist: .01	.04 / .008	.03 / .006	.02 / .004	.01 / .002
DDT alone	67	60	48	32	18
DDT + 1				25	10
DDT + 3	38	23	18	10	12

Table 5. Topical application of DDT and combinations of DDT and synergists against susceptible flies. 24-hr. % mortalities for following dosages of DDT and DDT-synergist combinations in microg./female fly.

Compound 1/	Time in min. for 50% knockdown: Laboratory	Super-Pollard	Time in min. of exposure causing 50% mortality in 24 hrs.: Laboratory	Super-Pollard
DDT alone	120	173	20	>180 (5%)
DDT + 1		127		92
DDT + 2		135		94
DDT + 3		160		111

1/ Residues contained 200 mg./ft.^{2} of DDT and 40 mg./ft.^{2} of synergists.

Table 6. Residual tests with DDT and DDT-synergist combinations against susceptible (Laboratory) and resistant (Super-Pollard) flies.

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Double Duty Vaporizer

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This fully automatic insect control unit is the first in the field to combine the benefits of vaporization and de-odorization. The large well vaporizes crystals containing Lindane while each of the two small wells contains a Chlorophyll tablet for the control of odors. In the city or on the farm, wherever insects and odors are a problem, this latest product of Universal research performs double duty in providing the answer.

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Double-Duty is guaranteed for one year. For one year from date of sale all defects due to faulty material or workmanship will be repaired, providing the unit is returned to our factory prepaid. This guarantee does not apply if the unit has been improperly used. Following the expiration of the guarantee period, repairs will be made for a reasonable charge.

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(see table 4). The relative increase in activity with methoxychlor-synergist combinations was not as great as with DDT-synergist combinations since methoxychlor alone was considerably more effective against the resistant strain used in these experiments than DDT. The synergists are peculiar in that they were ineffective in increasing the activity of DDT against susceptible flies, in fact, they appeared to decrease its toxicity somewhat (see table 5).

When resistant flies were exposed to residual deposits of DDT (200 mg./sq. ft.) or DDT-synergist combinations (200 and 40 mg./sq. ft. respectively) a number of interesting observations were made with respect to knockdown activity and time of exposure necessary to achieve 50 per cent mortality in 24 hours (see table 6). In general, the addition of synergists increased the knockdown activity of DDT for resistant flies to about the same level as DDT alone for susceptible flies. The resistant flies, however, required more than 4 times the exposure to the residual deposits of the combinations for 50 per cent mortality in 24 hours than susceptible flies required for DDT alone. The relative effectiveness of the synergist combination is evident though, since no appreciable mortality in 24 hours was produced by a 3-hour exposure of the resistant strain to deposits of DDT alone, although 50 per cent of the flies were knocked down in this time.

Limited field trials with the three most effective synergists were accomplished at two small hog ranches and two dairies near Riverside where the populations of house flies showed high levels of resistance of the DDT-lindane type. The DDT-synergist combinations were normally formulated as xylene emulsion concentrates containing, for example, 10 pounds of DDT, 2-4 pounds of synergist, 1 pint of emulsifier and xylene to make 5 gallons. In general, the DDT-synergist applications gave equal or superior control to any other materials which we have investigated since the development of the combined DDT-lindane type resistance in southern California. Applications of combinations of DDT and each of the three synergists (synergists 1, 2 and 3) using 20 pounds of DDT and 4 to 8 pounds of synergist per 100 gallons of finished spray, resulted in 5 to 8 weeks of satisfactory residual control under conditions of very heavy fly populations at the two hog ranches, though somewhat less at the two dairies, 3 to 5 weeks. This at least partially can be explained on the basis of the increased exposure requirements of resistant flies to the DDT-synergist deposits and the fact that the two hog ranches provided more treated surfaces where the flies tended to rest, especially overnight, than did the relatively open milking barns of the dairies where the fly population was more migrant.

Mosquitoes Show Resistance, Too

Present generation mosquitoes are several times harder to kill with DDT than they were in 1943, says Dr. Harry Stage of the Bureau of Entomology and Plant Quarantine.

Speaking at the 39th annual meeting, New Jersey Mosquito Extermination Association, Dr. Stage said government research studies made in Florida and southern California demonstrated that the longer a marsh area receives annual DDT spraying, the more resistance both larval and adult mosquito forms show.

Two suggestions offered by Dr. Stage to eliminate this problem: Place more emphasis on permanent control, by draining and filling possible breeding sites; wait till adult mosquitoes reach residential areas, then attack with fog, mist or hydraulic spraying machines.

Resistance To Synergist Combinations

A logical consideration in the study of synergists concerns the possible development of resistance to the combinations. Laboratory selection of a field strain of DDT-lindane resistant flies was then undertaken with a combination of DDT and 1,1-bis-(p-chlorophenyl)-ethane. Rapid development of resistance to the combination to levels as high as to DDT alone before selection, was effected (see table 2). Further tests with combinations of a number of the other synergists showed that resistance had developed to them as well. Although it is not possible to translate such results into the possible rate of development of resistance in the field, they presage its eventual development if the use of these synergists were to become extensive.

Summary And Conclusions

In many situations in southern California house fly control is no longer practicable by the residual application of the available insecticides which are normally used for this purpose. Nevertheless, since we know what can be accomplished with effective residual insecticides in comparison with other control measures, the most feasible solution to this critical problem appears to lie in the development of new residual insecticides against which resistance will not develop, the development of synergists for the present insecticides against which resistance has developed or the better utilization of such insecticides so as to prevent the build-up of resistance. The results of certain studies along these lines encourage further intensified research with potential organic phosphate insecticides and synergists for DDT, and, perhaps more profitably, methoxychlor and lindane against which such high levels of resistance, as for DDT, have not developed in the field.

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Rice Weevil

Buffalo Gnat

Fruit Fly

Silverfish

Angoumois Grain Moth

U.S.I.

Drugstore Beetle

Mediterranean Flour Moth

Polistes Wasp

Spider Beetle

Housefly

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Dark Meal Worm

Cadelle

Little Black Ant

Rust-Red Flour Beetle

Cheese Skipper

Scorpion

Confused Flour Beetle

Clover Mite

Mosquito

Bald-Faced Hornet

Saw-Toothed Grain Beetle

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"Big Stinky"...

a possible answer to outdoor fly control

A NEW TOOL for trapping flies called the "Big Stinky" is causing many pest control operators to ask: what is it? what will it do? what are its limitations? and how does it fit into the bread and butter end of the pest control industry?

The "Big Stinky" fly trap is radically new in some respects and old in others. It was invented by William E. Brown, amateur entomologist of long standing, who has for some years been physicist at Cutler-Hammer, Inc., Milwaukee, manufacturer of electric motor controls for industry. He received his degree in physics and chemistry at Beloit College, Wisconsin, and has developed several different types of successful, patented insect traps.

About ten years ago, when poliomyelitis started to assume epidemic proportions, William Brown began devising a trap which would selectively attract and kill those specific species of flies which had already established themselves as potential vectors of many communicable diseases. At the same time, he sought to spare a host of beneficial insects whose loss would possibly upset the balance of nature.

His research was directed toward trapping only those types of fly which breed in or frequent decaying animal matter, excrement and household garbage. Reluctantly, he had to rule out the mosquito for later treatment.

Better Attractant Needed

He was familiar with many of the common attractants for flies, most of which are the result of putrification, ferments or enzymes applied to various proteins and carbohydrates. Something better was needed. Brown had previously observed that the scent of certain species of female moth will attract the male across several miles of open prairie. He resolved to apply this same principle to the house fly.

Extracts were made of the flies themselves. These proved to be highly attractive to flies, but were also too costly to be available for mass usage at low cost. Various regenerative procedures were tried with the addition of known attractants.

Start With Ovipositional Bait

Finally, to get the trap into common use, it was decided to use one of the regenerative reactions. He set up a simple procedure requiring the customer only to supply some ovipositional starting bait, such as unsalted fish, liver or lean meat, to attract a predominance of egg-laying females. With the aid of a control fluid for extracting, balancing and digesting the imprisoned females, an odor highly attractive to male flies is given off. To anyone operating the trap for a season, it is apparent that the characteristic odor referred to is quite different from a strictly putrifactive scent. Occasionally, this odor becomes quite strong. However, without it, no adequate control of flies can be expected. The flies themselves seem to prefer it to that of a dead rat or fish.

Need for an effective attractant such as this is readily apparent to the operator who is expected to give his client good fly control in an oftentimes unsanitary environment, correction of which is not entirely feasible.

The "Big Stinky", as far as the PCO is concerned, serves as a bridge which spans the gulf between good sanitation outside and killing the last fly inside a building. This involves encouragement of good sanitation outdoors, together with the use of insecticide vaporizers, sprays and contact materials and other similar services inside by which operators derive their livelihood.

Don't Service Traps Yourself

It is rarely desirable for a PCO to service traps himself, we're told. Some success has been met by selling or renting traps to the client, then arranging to have a qualified operator give instructions in trap maintenance to one of his client's employees. It is recommended that employees should be allowed about 10 minutes maintenance time per trap. It is highly desirable that this person keep a record of the catch of flies emptied, using the record space furnished on a direction sheet, which accompanies each "Big Stinky". In this way, PCOs will know what has been done with the traps between calls.

Placement Of Traps

Location of traps is important. It is desirable to spread a number around a neighborhood, placing them at least 25 feet from the

(Continued on page 58)

Dioptron Co.'s "Big Stinky"

Adieu unwelcome guests

When you're called upon to eject unwelcome subterranean termites, summon Monsanto Penta to help you.

Penta (pentachlorophenol) is one of the most effective chemicals for eliminating termite colonies by (1) soil poisoning and (2) treatment of wood.

An effective soil-poisoning solution can be made as follows:

> Mix 8 volumes of 5% Monsanto Penta in oil with 1½ volumes of trichlorobenzene. One or two gallons of this formulation will treat 5 cubic feet of soil. The 5% penta in oil, used alone at the same rate, also gives excellent results in the soil and it can also be used to treat wood members.

Contact the nearest Monsanto Sales Office for information on the use of Monsanto Penta in termite eradication. Write for a free copy of Monsanto Technical Bulletin No. O-13, "Chemicals for Termite Control." MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 S. Second St., St. Louis 4, Mo.

DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto Canada Limited, Montreal.

PENTA

MONSANTO
CHEMICALS — PLASTICS

SERVING INDUSTRY... WHICH SERVES MANKIND

the PCO's role in

MOSQUITO CONTROL

What training does the PCO need to give effective mosquito control? Where are his talents most needed in this community problem? Who are his best sales prospects? Can he realize a fair profit? Read the answers to these questions in Mr. Dorer's authoritative report on this potentially large source of pest control business.

by R. E. Dorer
Engineer in Charge
Bureau of Insect and Rodent Control
Virginia State Health Department
Norfolk, Virginia

THERE HAS been more research and more written about mosquitoes than any other insect. This is due to the discovery in the latter part of the nineteenth century that the mosquito was involved in the spread of several dread diseases of mankind. As a pest, the mosquito might have been endured; but as a death dealing agent, it stimulated man to learn more and more about its habits and control. However, now that the known diseases borne by mosquitoes are well under control in this country, more and more interest is being manifested in making certain areas free of the pestiferous varieties.

Must Have Water

Fundamentally, mosquitoes must have water to complete their life cycle. Therefore if all water could be eliminated or made unsuitable for breeding, the problem of control would be solved. This is, of course, much easier said than done. It involves problems in engineering, chemistry, and entomology.

The eggs are laid by the female mosquito, different species preferring different conditions. Some lay their eggs on the surface of water, singly or in rafts, while others lay them in the wet mud where they remain dormant until covered with water at the proper temperature; still others cement their eggs to the sides of receptacles at the water line. The eggs hatch into larvae and the larvae change to pupae, which eventually hatch into the adults. All species follow this pattern; but different species prefer different types of water. Be it clear fresh water, polluted water, salt water, or a cupful of water in an old tree stump, there is a species of mosquito that will find conditions ideal for its reproduction. This makes it essential to know the species of mosquitoes bothersome so that control efforts may be directed against thee type of places where the culprit breeds.

Until recently, mosquito control was directed against the larvae and pupae—those stages that are spent in water. However since World War II, new insecticides and machines have been developed that made it possible to control mosquitoes on the wing. It is still considered that control of larvae and pupae is the most practical; but for temporary control and as a supplementary measure, fog and mist machines are very useful tools.

Larvae Control Most Practical

Mosquitoes can be controlled in any area. This fact has been proved time and time again. The questions to be decided are, therefore: (1) Are there sufficient people living in the area to make the cost of control economical when broken down

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Try Big Stinky today, at all leading dealers or write for complete information.

See table below for size, number and use.

Recommended For	Size of Trap	Number of Traps
Restaurants, motels, Food Processing plants, etc.	½ gal.	3 to 6
Community and neighborhood fly control programs	½ gal.	1 to 3 per city block
Factories, institutions, farms, zoos, etc.	1 gal.	6 minimum (add 2 per additional acre of confined animals.)

PRICE includes Big Stinky trap, 8 oz. bottle of Control Fluid and complete directions.

1 gal. Big Stinky Fly Trap - - - - **$4.95**

½ gal. Big Stinky Fly Trap - - - - **$4.49**

Extra bottles of Big Stinky Control Fluid **$1.50**

THE DIOPTRON CO. MILWAUKEE 1, WISCONSIN

Fog machines are useful tools in mosquito control. A Tifa is pictured here.

to a cost per individual basis; and (2) Are the people willing and able to pay for this service?

Place For PCOs

Mosquitoes know no boundaries, and this makes them a community problem. An individual's effort at control is important and should be encouraged; but unless his neighbors do likewise, his effort may be of little value. Most of the mosquito work done in this country has been by a public agency set up especially for this purpose. It may be possible for pest control operators to step in and perform a real service in this field providing they meet two requirements. First, they must be well trained and capable of doing the job; and second, they must keep their costs within equitable limits. It would appear that education, an important factor of mosquito control, along with inspection and enforcement must be kept in the hand of a public agency. In smaller communities where a small program is needed but would not justify the employment of a crew of men full time, the pest control operator might very well do the job at a saving to the community.

Entomological surveys to determine the bothersome species of mosquitoes and where they are breeding and the operation of light traps in control areas with the identification of mosquitoes are services that might be contracted to private interests.

Larviciding has become a specialized operation. The newer insecticides must be applied with skill and in the proper dosages. If too little chemical is used, there may be failure to kill the larvae; or if too much is used, there may be a kill of other valuable forms of life. Specially trained men are essential; and the pest control companies might well furnish such personnel. The only problem to work out along this line is the granting of authority to employees of a private company to enter private property.

Opportunity In Adult Control

Adult control seems to be one of the best places for operators to fit into the picture. In areas where there is no organized mosquito control and where a gathering of people is contemplated, there is a good chance to sell an adult control job. This could be small, as a wedding party, or large, such as a carnival. Open-air theaters offer a continuing contract for each night throughout the summer season. In smaller control districts where limited funds do not allow the purchase of a fog or mist machine, the PCO could rent his machine as needed and thereby would be filling a real need.

All service men working for pest control operators should be familiar with when and where mosquitoes breed. By keeping their eyes open, they will be able to uncover many breeding places while on other work; and this may result in special mosquito jobs or will result in furnishing additional service and goodwill to the customer.

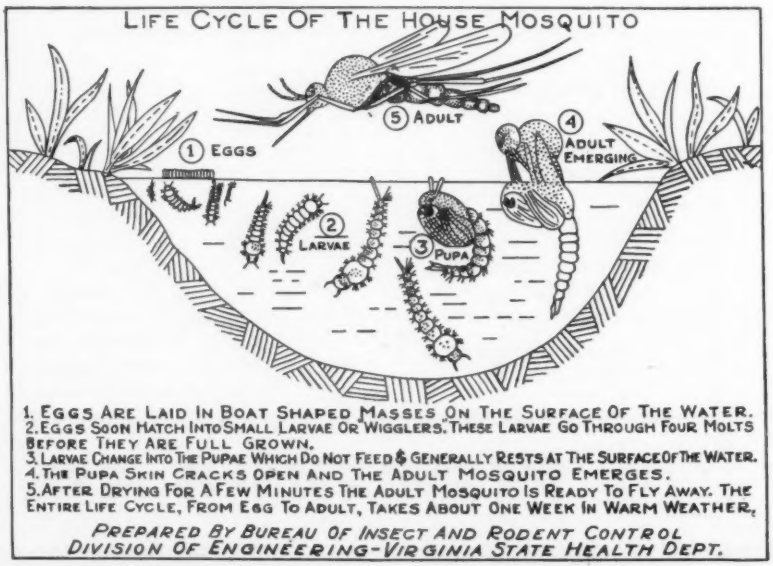
In Civil Defense

In the civilian defense program, it behooves each and everyone to do that which he is best prepared to do. There is a possibility that mosquitoes might be used in connection with biological warfare. If such happens, the personnel, equipment, and material of the pest control operator may be immensely needed.

No doubt, there will develop other angles where private interests can contract mosquito control work. It seems logical, therefore, for the pest control operator to become familiar with the problem and acquire special knowledge and skills along with necessary equipment so that he will be prepared to do the work.

All who are interested are invited to join the American Mosquito Control Association and thereby become better informed by reading *Mosquito News*, which is published quarterly.*

*Write for membership blank to Thomas D. Mulhern, Executive Secretary, American Mosquito Control Association, Inc., 334 Rowell Building, Fresno, California.


LIFE CYCLE OF THE HOUSE MOSQUITO
1 EGGS
2 LARVAE
3 PUPA
4 ADULT EMERGING
5 ADULT
1. EGGS ARE LAID IN BOAT SHAPED MASSES ON THE SURFACE OF THE WATER.
2. EGGS SOON HATCH INTO SMALL LARVAE OR WIGGLERS. THESE LARVAE GO THROUGH FOUR MOLTS BEFORE THEY ARE FULL GROWN.
3. LARVAE CHANGE INTO THE PUPAE WHICH DO NOT FEED & GENERALLY RESTS AT THE SURFACE OF THE WATER.
4. THE PUPA SKIN CRACKS OPEN AND THE ADULT MOSQUITO EMERGES.
5. AFTER DRYING FOR A FEW MINUTES THE ADULT MOSQUITO IS READY TO FLY AWAY. THE ENTIRE LIFE CYCLE, FROM EGG TO ADULT, TAKES ABOUT ONE WEEK IN WARM WEATHER.
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"SERVING THE PEST CONTROL INDUSTRY"

Purdue Conference Report

(Continued From March Issue)

This is the concluding section of Pest Control's report of this year's Purdue Conference, held in Lafayette, Indiana, Jan. 28-Feb. 1. Last month the sessions on stored grain pests and fabric insects were reviewed. This month's report details latest findings on mice and rat control, termites and sales and customer relations problems.

Care With Rodenticides

Presiding over the session on rodent poisons and formulations were District Agent Galen C. Oderkirk, of the U. S. Fish & Wildlife Service, Lafayette, Ind., and William Turrie, of Wil-Kil Co., Milwaukee, Wisconsin. "Servicemen range from those who get a thrill out of handling deadly rodenticides to those who are as careful of other lives as they would be of their own." So stated Mr. Oderkirk as he urged PCOs to take great care in the formulation and placement of their baits.

Shifting focus, Oderkirk then indicated wide variance has been found in the toxicity of red squill, and that neither fortification or laboratory tests of this product have been standardized.

Regarding placement of baits, Oderkirk was inclined to think it was entirely a matter of personal judgment, and no hard and fast rules could be followed.

Bait preparation, too, came under the heading of individual judgment, but here are some of the trends revealed by Oderkirk. Cereal baits should be changed monthly to prevent spoilage. Addition of oats to warfarin baits will hinder rancidity. If your principal constituent is fresh meat, a ¾ of 1% sodium sulfite may be added as preservative. Successful use of both horse meat and shrimp as principal constituents has been made in warfarin baits. Melon seeds were also named as a possible bait material.

"In order for warfarin to be effective," Oderkirk concluded, "rats must get it in continuous dosages at intervals not greater than 48 hours."

Big Strides In Malaria Control

Within the past five or six years tremendous advances have been made in the control of the *Anopheles* mosquito, carrier of malaria, Professor John Osmun said, as he and co-chairman J. R. Franklin, Hammond Pest Control Co., Hammond, Ind., opened their session on area fly and mosquito control. "Common breeding places for *Anopheles*," Osmun continued, "are in vegetation surrounding clear pools, lakes and streams. A far more persistent and abundant pest is the house mosquito, *Culex pipiens*, which lays its eggs in rafts wherever there is stagnant water. *Aedes vexans*, often called the marsh mosquito, lays its eggs in dry areas likely to be inundated by water. Thus infestations of this species will appear 'suddenly' as eggs hatch in the new water. "*Aedes* are daytime biters," Osmun noted, "while *Culex* bites around dusk. Mosquitoes," he concluded, "are frequently a problem in large swampy areas, picnic grounds, large lawns, golf ranges, trailer camps and drive-in movies."

Varying opinions came forth as J. R. Franklin then called for comments on the types of mechanical equipment best suited to eliminate mosquito infestations. Franklin prefaced the forum by saying that successful spraying for mosquitoes depends in great measure on atmospheric and geographic conditions, and he warned that PCOs should not promise too much in this type of control operation.

It was generally agreed that mist blowers are well suited to localized, heavy dose jobs, such as on a city dump, or in alleys, but that their droplet size was too large to carry far. Care should be taken when using mist blowers that foliage is not sprayed to avoid possible burning of the leaves.

Foggers, on the other hand, were termed the best machine for large area jobs, so long as the wind is in your favor or not present. They are designed for adult mosquito kill only, and have little if any residual action. Fogging often gives best results, it was stated, when used in conjunction with a larviciding program.

Herman Militzer, H & M Laboratories, Toledo, Ohio, suggested that one way of getting good larvicidal action is to impregnate sawdust with insecticide, place it in a cloth bag, weight with a brick and throw it into a gently moving stream.

Hydraulic sprayers were termed best for small, individual jobs, such as a single building, or indoor work.

Because of weight problems, airplane-sprayed insecticides must be oil-solvents, said J. R. Franklin. His personal feelings were that airplane spraying looks impressive, but is not generally successful for mosquito control.

Fly Control???

Fly control for 1952 remained an unsolved problem. So much resistance has been met with newer insecticides that few official agencies seem willing to make recommendations. Illinois suggests that PCOs use the material which proved most successful last year, Professor Osmun reported. They also indicated that dilan, manufactured by Commercial Solvents Corp., New York City, might give good control. Little hope was held out for the effectiveness of present synergists.

Mice Individualists

Mice are individualists, and their actions unpredictable, W. D. Fitzwater, co-chairman of the mouse control session, told his group. Mice have more tolerance to poisons per body weight than rats, he said, and can survive for long periods without water. Ninety per cent of these rodents spend their entire lifetime within an area of 12 square feet, with the average life span being 6 to 9 months. "It is almost impossible," Fitzwater declared, "to practice complete sanitation, since it is difficult to adequately mouse proof a building."

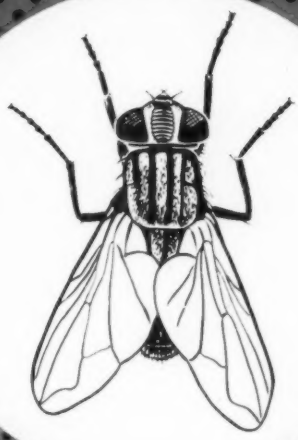
"Servicemen should be training in the lost art of trapping," Art Gibson, Sentinel Insect Control, Springfield, Ill., Fitzwater's co-chairman stated. "They should know how to handle and place mechanical eradicators as well as chemical controls." Gibson suggested that one method of making glue boards more effective was to construct a shelter over them and place along walls, making an ideal "run" for mice. He reminded his

CONTROL

Flies

WITH

CHEM-LIN



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CONTROL

Mosquitoes

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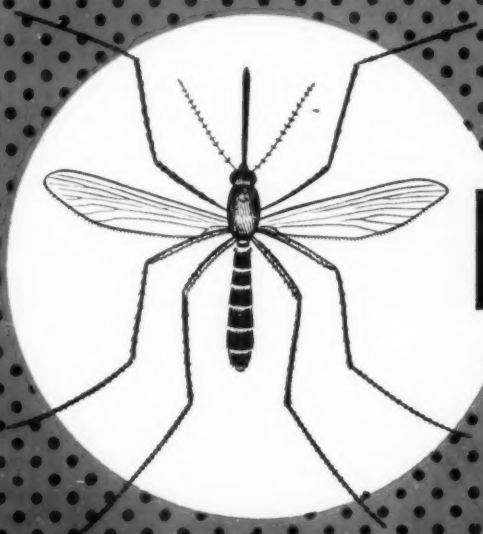

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listeners that when purchasing glue, specify summer or winter grade.

For an as yet undetermined reason, 1080 no longer seems as effective against mice as before. Neither speaker could see how mice could build up an immunity to this quick acting poison, and concluded that mice are getting 1080-shy.

In placing baits for mice, it must be remembered these rodents are nibblers, and do not feed heavily in one spot. Addition of 5% confectioners sugar, not granulated, seems to make baits much more attractive, it was stated. In the use of tracking powders, Fitzwater observed, 50% micronized DDT powder is much superior to ordinary wettable compounds.

Preceding Wednesday night's review of the day's sessions was the screening of a splendid 22-minute promotional termite film, taken in color by Bernard Scherzinger, Extermital Termite Control Co., Cincinnati, O. Scherzinger announced that his film would be available on lease to PCOs.

Occasional Invaders

Consideration of many types of occasional insect invaders was lead by Dr. Ralph E. Heal and a panel of experts composed of Professor J. J. Davis, Galen Oderkirk, Dr. B. F. Montgomery, Glenn Lehker, Carl Weinman and J. Wilfred Gunn at the Thursday morning meeting in Fowler Hall.

Dry wood termites can now be considered as an occasional invader in the east, according to Dr. Heal. He revealed that only last year he found an infestation where dry wood termites had been shipped cross country in several cases of California grapes, and established themselves in a New York home. J. Wilfred Gunn stated that dry-wood termites swarm from late July till November, and that this species can exist in as little as 2½ to 3% moisture. He added that 3 pounds methyl bromide per 1000 cubic feet in atmospheric type fumigation will kill *kalotermes*.

Consensus of opinion on bees, hornets, and yellow jackets was that while fairly easily controlled, they are difficult to get at once dead. Combs located in inaccessible places, as well as the dead bees themselves, are liable to be a much greater nuisance than the live insects. Wallpaper has frequently been ruined by spilled honey, and dead bees can create unquenchable odors. Dr. Montgomery, who led this session, said that all sprays used on these insects should be strongly residual in action. He recommended the use of cyanide dust, mixed with DDT or chlordane, placing a spoonful or two in the mouth of each nest.

Cluster or "attic" flies, Glenn Lehker stated, emerge in fall, after their parasitic larvae leave the bodies of fishworms. Good residual chlordane spray in the attic, plus stuffing lindane soaked cotton batten in window pulleys will help control this pest. It was also suggested that 2% chlordane dust be placed on window sills.

Galen C. Oderkirk felt that fumigants were of little use in controlling snakes. Nicotine sulphate or flake naptha seems to have a repellent effect, he said, but probably the best method is to kill them by hand. On pigeons, Oderkirk suggested poisoning with strychnine in cracked corn bait, but cautioned that there are many legal barriers in practicing pigeon control. Scare devices, it was opinioned, are worthless unless set off just at dusk, when the pigeons are beginning to roost.

Millipedes seem most prevalent in areas of great moisture, according to comments by Carl Weinman, entomologist at the Illinois Natural History Survey, and Ernie Forde, Hawaiian PCO. Forde pointed out that millepedes are numerous in Hawaii, which has frequent tropical rains. One soil treatment suggested was 1 to 3 ounces of 1% DDT dust sprinkled over 100 feet on lawns around houses. Dow fumigant W-40 injected into soil at rate of 1 gallon every 100 feet was also said to be effective. Caution was given, however, that this must be applied below plant roots, or shrubs and vegetation will die.

What Basis For Termite Bid?

Should termite bids be made on the basis of the customer's pocketbook, or on what it will take to do a thorough control job? This seemed to be the major question at Thursday afternoon's discussion on termite control in the average home. Chairman Bernard C. Berger led the following panel members in an effort to find the answer: W. H. McCain, Stanford Crosby, John Mock, Harry Meyers, George L. Hockenyos, W. K. Delaplane, Jr., and Marvin Reno.

It was generally agreed that when a termite operator is working on a guarantee or yearly fee basis, he must, for his own protection, do as thorough a job as

(Continued on page 50)

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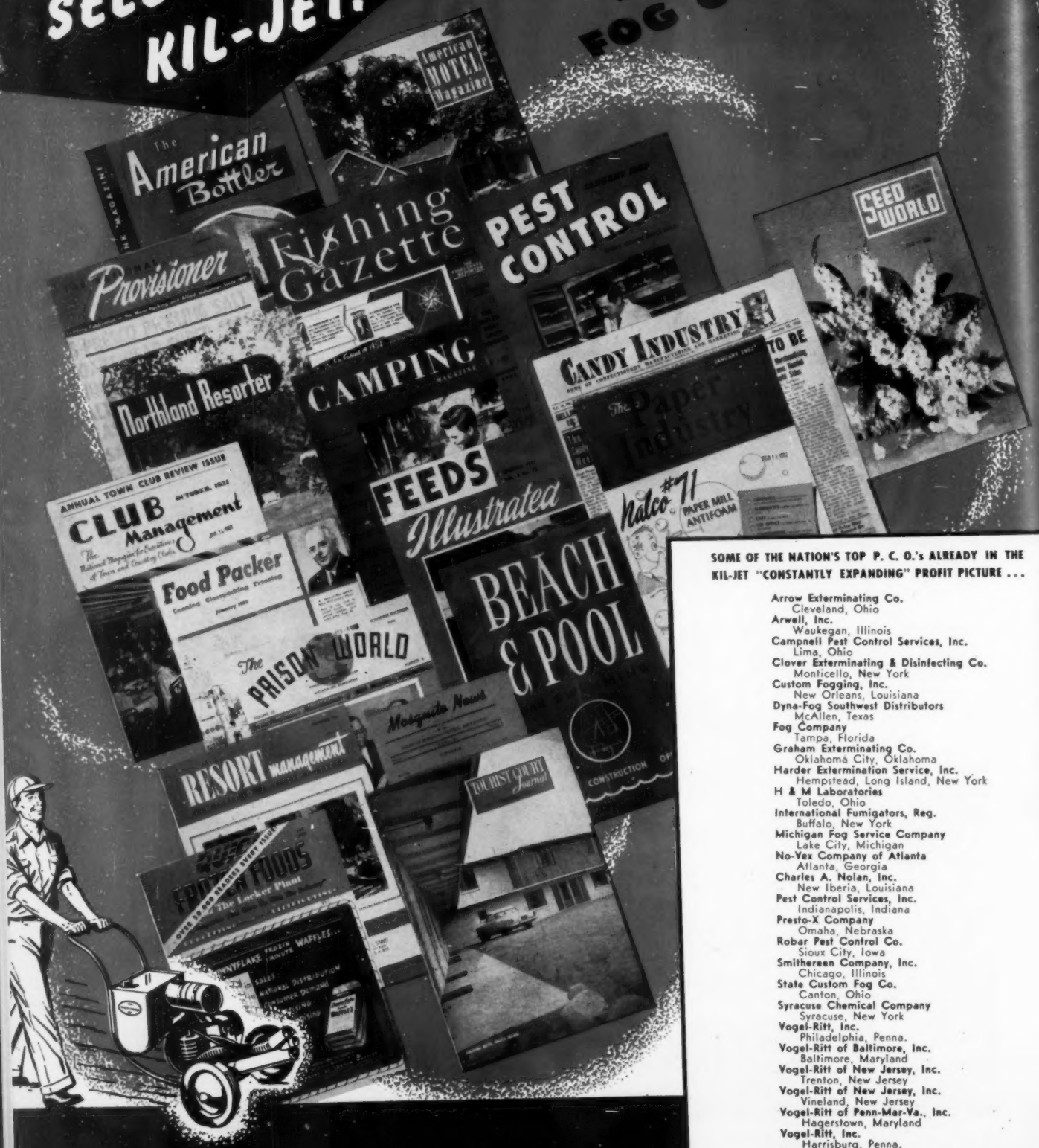

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- Trailer Camps
- Golf Driving Ranges
- Golf Clubs-Country Clubs
- Riding Clubs
- Yacht Clubs
- Storage Warehouses
- Dairies
- Poultry Farms
- Food Processors
- Nut Processors
- Feed Plants
- Seed Houses
- Bakeries (Commercial)
- Candy Manufacturers
- Greenhouses
- Fisheries (Commercial)
- Nurseries
- Bottling Plants
- Breweries
- Landscape Gardeners
- Canning Companies
- Milk Processing Companies
- Paper Manufacturers
- Boxboard Manufacturers
- Meat Packers
- Slaughter Houses
- Carpet Manufacturers & Sales
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Little Outlines Control Needs Of Food Processing Plants At 9th Annual California Convention

by Karl Hassler

Wayne K. Davis, left, new California PCO president, receiving the official gavel from outgoing prexy **Joseph Goulding**.

"Prevention rather than control should be the aim of PCOs doing service work in food processing plants," Donald Little said before over 150 delegates to the 9th Annual Convention, Pest Control Operators of California, held February 25-27 in Bakersfield.

Little, who is chief sanitarian of the Dried Fruit Association, told his listeners they should know the proper control methods and materials to be used in food plants, and that federal and state safety regulations must be heeded. He added that knowledge of pests infesting food is essential to successful control. This includes insect identification and recognition of potentially dangerous sources of infestation. Little's complete report will be published in the May, 1952 issue of *Pest Control*.

Know Food & Drug Rules

Association president Joseph Goulding, Los Angeles, formally opened the three-day meeting at the Bakersfield Inn. After Little's talk, George Steele, of the California State Bureau of Food & Drug Inspection, spoke on the limitations of chemicals used in food handling plants. "Operators and servicemen alike," he said, "should acquaint themselves with all federal and state regulations on the use of chemicals in food plants. All practices must be brought within legal requirements." One of the most common violations, he stated, was the exposure and use of insect and rodent poisons in rooms where unpackaged food is processed, stored or handled.

Photos courtesy of James Clark, Bakersfield, Calif.

Allen B. Lemmon, chief of the California State Bureau of Chemistry then clarified the division between structural and agricultural pest control, as regards his department's interpretation of the laws.

Later, delegates heard the latest information on rodent control, group insurance, customer relations, and other business and technical problems.

National Pest Control Association president Robert C. Yeager, officially representing his organization at the meeting, discussed the future of the industry at a national level. A special NPCA booth was set up at the convention to supply delegates with information on the various services offered to members. J. Wilfred Gunn, NPCA executive vice president, was in charge of the exhibit.

Pest control laws and their application highlighted talks during the latter part of the meeting. New legislation to give stricter control over the industry at the state level was endorsed by the membership. Delegates voted to meet with the state legislature interim committee to discuss improvement in laws covering work of the state pest control bureau. Better legislation controlling the use of poison gases was recommended.

New Officers Named

Election of the California association's 1952 officers took place at the final business session. Wayne K. Davis, Berkeley, is the new president, succeeding Joseph Goulding. Robert Mesecher, Burbank, is 1st vice-president, while James F. Clark, Bakersfield, is 2nd vice-president. Darrel Cardiff, Santa Cruz, is new treasurer. Secretary will be appointed by the incoming president.

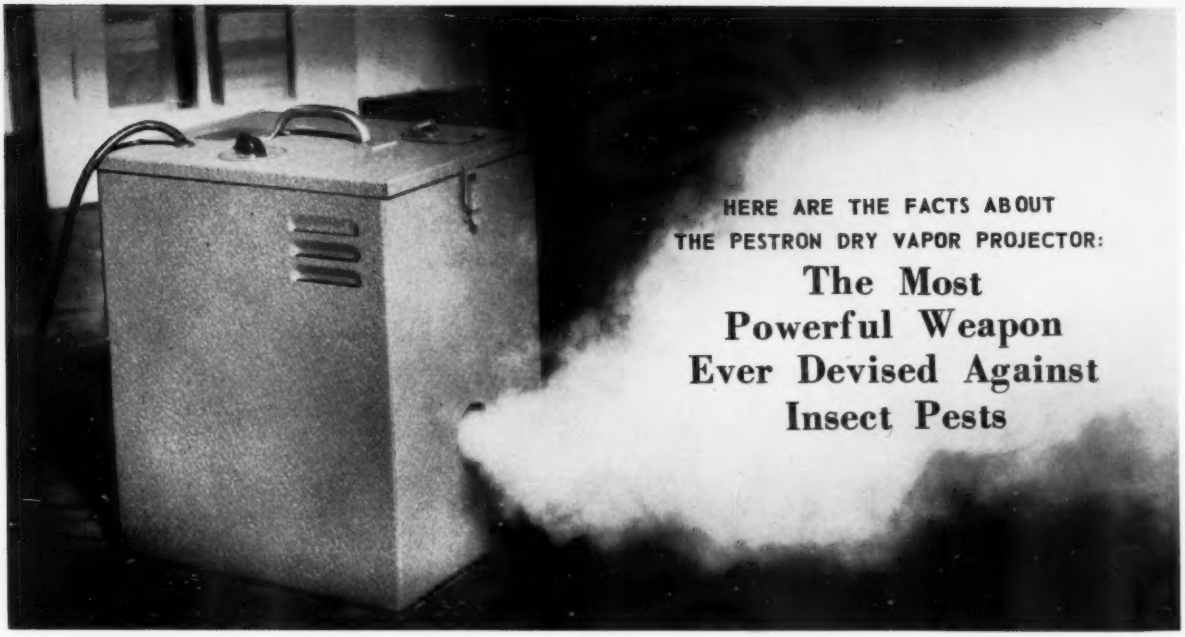
Sizzling steaks and flaming baked Alaska were menu features at the gala closing night banquet in the Palm Room of Bakersfield Inn. Entertainment and dancing followed.

Fifty-three "lady bugs" from all parts of California attended the meet. The ladies organized a Bakersfield division of their statewide group, and took active part in the special luncheons and meetings scheduled for their auxiliary association.

Profits from the convention will be used to begin a scholarship

(Continued on page 52)

"Dead" tired at close of successful meeting are convention co-chairmen **James Clark** (left) and **Charles Delk**. They're holding lilies to prove it.



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In just five minutes, this amazing machine converts one ounce of pure, dry Lindane crystals into three hundred billion lethal particles . . . certain death to all insects affected by this powerful insecticide in a 10,000 cubic foot area. Effective against practically all indoor insects, including

Ants	Crickets	Mosquitoes	Silverfish
Bedbugs	Fleas	Moths	Spiders
Carpet Beetles	Flies	Roaches	Ticks
Centipedes			Water Bugs

No escape, no retreat for insects, because these minute, snowflake-like particles permeate into every crack and crevice where insects hide, adhering to the pads of the insects' feet as well as to other parts of the body. Because the vapor equalizes itself within a few minutes throughout the entire area, there is no possibility that a careless operator will miss a place. Because the Pestron unit projects **dry vapor** (unlike other methods which dilute insecticides with petroleum carriers) there is

Absolutely no fire hazard. Pilot lights need never be turned off. Nor is there any possibility of damaging or staining any material. No mixing of chemicals, no dripping as with liquid insecticides. No objectionable odor. Lindane is a dry, crystalline material (packed in 2, 10, and 50-lb. cans); therefore there is no possibility of waste or damage from spilling or breakage.

Here's what a leading entomologist says about Pestron: In a test conducted in a well-known warehouse, 15 cages of roaches were placed in a room of approximately 50,000 cubic feet. Some of the cages were left uncovered; others were covered to simulate actual storage conditions. Test cages were placed at all distances from the Pestron unit and at all levels: floor, mid-shelf and top shelf. The Pestron unit was allowed to run without any operator. Results: 100% kill. William B. Rasmussen, research entomologist in charge, reported: "This vaporizer, with its high output of pure Lindane vapor and the blower to distribute the vapor, produced the best results of all equipment tried to date in the same room."

In another test, this time in a dairy milking shed with a tremendous fly population, Pestron was demonstrated to health authorities and proved effective against the Bellflower fly, the toughest, most DDT-resistant strain in the country.

Does Pestron leave a residual to prevent reinfestation? Whichever you prefer: the amount of residual deposit is regulated by the amount of Lindane you use. Sometimes it is advisable to treat more often than more heavily. In any case, however, there is no danger that too much chemical may be deposited at any one place, because the dry vapor—as shown in test after test—automatically equalizes its own distribution.

Entirely automatic, the Pestron requires no specially-trained operator. You simply flip a switch; a time clock turns it off automatically. Portable: weight 22 lbs., 14" high, 13½" long, 9½" wide. Because it uses pure dry Lindane (one ounce equals seven pounds of any other material) it is many times faster than other methods. Frequent refilling unnecessary: hopper holds one pound of Lindane (equivalent to sixteen gallons of liquid spray).

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TERRATOX 218 CONCENTRATE
Water soluable Pyroarsenate and Dichromate... dilutes 1 pound of dry chemical to 3 gallons of water. For use where foodstuffs are stored which easily absorb odors.

CHECKPEST ROACH SPRAY CONCENTRATE
Dilutes at the rate of 1 part with 19 parts of deodorized oil to make a finished insect spray. Ideal for homes, restaurants, food storage warehouses and flour mills without leaving poisonous residues.

CHECKPEST C-75 CONCENTRATE
8 pound Technical Chlordane solution... dilutes 1 to 46 with water or 1 to 59 with deodorized kerosene. Ideal for household pests and garden insects.

CHECKPEST C-46 CONCENTRATE
4 pound refined Chlordane solution... dilutes 1 to 23 with water or 1 to 29 with deodorized kerosene. Minimum odor and cleanliness for inside use.

CHECKPEST B-20 CONCENTRATE
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CHECKPEST D-25 CONCENTRATE
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A Section of PEST CONTROL magazine

TERMITES

and other enemies of wood

Consultants: Dr. Thomas E. Snyder, Washington, D. C.; George L. Hockenyos, Springfield, Ill.; A. H. Bender, Washington, D. C.; R. B. Mesecher, Burbank, Calif.; J. Wilfred Gunn, Herbert R. Packard, Karl Hassler, Los Angeles, Calif.; Dr. Ira Hatfield, St. Louis, Mo.; Dr. E. H. Behr, Memphis, Tenn.; H. R. Isherwood, St. Louis, Mo.; J. L. Howell, Houston, Texas; Jack Ratcliffe, Tampa, Florida; Stanley L. Lind, Chicago, Ill.; W. K. Delaplane, Jr., Champaign, Ill., Fred J. Bowers, Rahway, New Jersey. The information in this section does not necessarily reflect the opinion of these termite consultants and they will assume no responsibility for articles other than those which bear their names.

Can Owners Conceal Termite Presence In Property Offered For Sale?

by Stanley L. Lind

Attorney-at-Law

American Laboratories, Chicago, Ill.

Sellers may not conceal the fact that their property is infested by termites once they offer it to a prospective buyer. This ruling has an excellent example in a decision handed down by the Michigan State Supreme Court, December, 1949, in the case of Sullivan vs. Ulrich.

A doctor named Sullivan asked the real estate agent if there were ever any termites in a house he was planning to buy. The agent said there were none to his knowledge. Not satisfied, Sullivan told the agent to ask the owner, a Mrs. Ulrich.

At their second meeting, the agent told Sullivan "there have never been any visible signs of termites." Sullivan assumed this was the owner's answer. Later, while inspecting the house, Sullivan noted that new wood had been used to repair part of the basement recreation room. When he asked Mrs. Ulrich what caused the damage, she said it had been made by the "water meter".

Sullivan bought the house and then found he had a heavy infestation of termites. He brought an action against Mrs. Ulrich for falsely concealing this fact. The lower court upheld Mrs. Ulrich, saying Dr. Sullivan had no cause for action. He appealed to the Michigan State Supreme Court, where the decision was reversed and damages were awarded to the doctor.

Evidence showed Mrs. Ulrich had called in a PCO to eliminate an infestation of rats. While there, the operator discovered signs of termites. A thorough inspection was made, and termite damage was uncovered at several points in the house. The owner was told about this condition. She decided to do nothing about it. Shortly after, the house was put up for sale. Clearly a case of false concealment.

I would like to comment briefly on some of the legal aspects involved:

(1) The vendor is responsible for representations made by his real estate agent to the purchaser in connection with the transaction. This means that the agent in the case above spoke for Mrs. Ulrich, and she is held accountable. In legal phraseology — a principal is bound by the acts of his agent, just as though he performed the actions himself.

(2) The evasive answer given by the agent when asked if there were any termites in the house will not constitute a valid defense.

Here's a classic example, found in the law books, of an evasive answer. A man buying a horse asked the seller, "Is the horse sound?" The seller replied, "He doesn't look so good." When the sale was completed the buyer found the horse was blind. The seller's defense in court was based on his statement that "he doesn't look so good."

This case of Sullivan vs. Ulrich establishes legal liability upon the seller of a house who attempts to fraudulently conceal evidence of termites.

Faulty Appraisal Can Cause Trouble, Too

Faulty appraisal is another snag the buyer can run into. Here's an example. In Toledo, Ohio, an ex-GI purchased a home which an appraiser reported being free of termites. After purchase, the buyer found an extensive termite infestation in his home. Control measures alone cost $240.00. This did not include repairing the damage itself. Yet the appraiser's **written** report stated there was no evidence of termites.

Such a mistake illustrates the great need banks and other lending firms have for the technical training and practical experience of professional termite operators. More and more such institutions, particularly in California, are beginning to realize the importance of protecting their security by requiring a competent termite inspection before making a loan commitment.

Stethoscopes for Termites

That isn't as far-fetched as it may first appear. In San Diego, California, there was a demonstration of the possibility of radio detection of working termites and beetles in a structure by listening for the chewing sounds made by their mandibles. That's what Dr. Dwight W. Pierce reported in a speech he gave at this year's California PCO convention.

"If steel men can devise delicate instruments to detect defects in steel armor plate, why cannot someone devise delicate instruments for detection of breakdown by fungus and insects in structural timbers?" Dr. Pierce asked. "Why not?" we agree!

Testing Soil Poisons For Termite Control [1]

by R. A. St. George
Entomologist, Bureau of Entomology & Plant Quarantine
Beltsville, Maryland

In the early thirties, little information was available as to the toxicity of various chemicals to termites, to vegetation, and to people handling them. In order to determine which insecticides were toxic to termites, which ones could be used safely for their control and how and at what rates they should be applied, various tests have been conducted during the last 20 years. They have consisted mainly in applying the poisons either to soil surrounding infested wood in place or to plots established for this purpose, and examining the ground periodically thereafter for termite activity.

Early Methods

It may be of interest to consider some of the methods that have been used for evaluating soil poisons. Such methods have helped not only in establishing the toxicity of certain chemicals, but also in furnishing ideas that ultimately led to the adoption of a standardized field procedure for making long-time service tests.

During the period 1928 to 1932 the Termite Investigations Committee of California, in cooperation with the University of California and others, tested various chemicals by applying them to the surface of the ground surrounding infested telephone poles, and by treating the soil in shallow trenches made about the foundations and piers of buildings.

In 1932 a subcommittee of the American Railway Engineer Association under the direction of Herman Von Schrenk at Florissant, Missouri, poisoned the soil about some 2x4x18 inch stakes set out in rows 8 feet apart. Either a pint or a pound of chemical was poured into a depression a foot in diameter made about each stake.

The Bureau of Entomology & Plant Quarantine conducted its first large-scale soil-poison experiment at Riverhead, Long Island, in 1932. Western red cedar poles 16 inches in diameter were placed under test with 30 different chemicals. The soil about each pole was removed to a depth of 30 inches, and as it was being replaced the chemical was applied at the rate of 0.4 gallon or pound per cubic foot. At the end of five years the following materials were found to have checked infestation and prevented reinfestation: (1) Arsenic trioxide, copper arsenite, sodium arsenite, and zinc metaarsenite, all applied as dry powders; (2) 10 per cent solution of sodium arsenite, straight orthodichlorobenzene, crude monochloronaphthalene, a mixture of beta-naphthol-orthodichlorobenzene and petroleum oil, and mixtures of coal-tar creosote and kerosene or fuel oil in the proportion of 1-1 or 1-2 by volume, applied as liquids. The sodium arsenite solution, monochloronaphthalene, copper arsenite and zinc metaarsenite stopped reinfestation for eight years.

In 1935 W. E. McCauley, of the Illinois Natural History Survey at Urbana, conducted a series of tests. His method consisted in removing the soil to a depth of 20 inches from duplicate 2x6 foot plots and treating it as it was being replaced. He then set out five fir stakes, 2x2x24 inches in the middle longitudinal line of each plot, burying each stake half its length in the ground. This method permitted mixing of the chemical with the soil to a known depth, and also forced the termites to travel through the poisoned earth to reach the wood. Check stakes were placed 3 feet from the treated soil in each plot.

The New Jersey Agricultural Experiment Station established in 1937 another type of test in which a trench 1-1/4x4x2/3 feet was employed as a plot. The soil was treated as it was being replaced in the excavated area. Two white pine boards 3/4x4½x30 inches were placed horizontally in the treated soil. The plots were replicated six times, and similar untreated plots were used as checks.

Hatfield Test

In 1938 Ira Hatfield, of the Monsanto Chemical Company, devised still another type of test. He established plots 15 inches in diameter and 16 inches deep, 5¼ feet from center to center in alternate rows. He removed the soil in each plot, treated it as it was being replaced, and then drove a stake 2x4x18 inches, 1 foot into the center of the treated soil. Each treatment was replicated 10 times and suitable checks were established in untreated soil.

To Be Concluded In June

[1] From a talk presented at the 19th NPCA Convention in Boston

"Who-Dun-It?"

(A Termite Mystery)

by Jack Ratcliffe

A harassed builder called me not long ago for technical advice. This was his problem:

He had constructed a lovely house with special features. Eight months after the buyers moved in, they demanded that he finance the cost of a complete termite job and replacement of the parquet wood flooring.

Buyer claimed termites got started because builder had left scrap wood and mold boards in the ground. Buyer claimed those boards and scrap were the cause for a colony to get started and ruin the flooring.

Builder asked me, "How old was the termite colony? Had it been there before the house was builded, or was it a new colony developed A.C. (after construction)?"

"Just how that would or would not determine your responsibility is a point I can't quite see," I said. "But if that is the only information you desire, I may be able to provide it after a little inspection and detection."

"Yes," he said, "if you can assure me the termite colony is older than the house then I cannot be held responsible in any way."

"OK." So I put on coveralls and went to work.

Object of my search was simple, of course. I was looking for evidence of winged forms in the colony. And sure enough, the adult kings and queens were there in great numbers. A small mess of them ended in one of my vials of alcohol.

Back on the human side of the house, builder and I again met. "Sir," I said, "if age of the termite colony gives you legal relief from responsibility, then you have relief. But the way you did things in this house was mighty friendly to those termites."

I got the job, and from the builder, too. But I never did find out the legal angle to the question.

Editor's Note: It takes a new termite colony at least two years to produce winged sexuals, kings and queens. Therefore, in a new house, swarmers would indicate that the colony was already there or close-by before the house was constructed. If you find swarmers in a new house, inspect for stumps or other old sources of infestation. If the neighbor's house is close by, inspect it. You may have another job.

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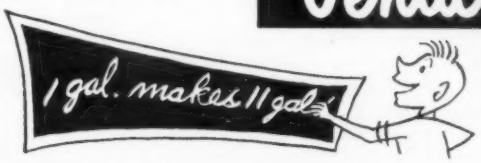
Preservative Concentrate 

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PEST CONTROL

primer

by A. Pescop

Identification Of Orders; No. 9, Diptera

Part I

Dip (two), **pteron** (a wing)

Houseflies, stableflies, horseflies, blowflies

Characteristics:

1. Two wings, also has a pair of organs just behind the wings known as balancers or halterers.
2. All Diptera (adults) have sucking mouthparts, some functioning like a sponge, as in the housefly, others piercing and sucking as in the mosquito and stable fly.
3. Complete metamorphosis

Of Importance To PCO

Houseflies (Musca domestica): About ¼ inch long. Gray, with black stripes on top of thorax. Eyes dark red and abdomen yellowish at base. Contrary to popular belief, houseflies cannot bite because of sponging type mouth parts. Overwinter in all stages. Breed in manure piles, garbage cans, refuse dumps. Space sprays or aerosols with quick knock-down agent, such as pyrethrins in deodorized kerosene, are a temporarily effective control method. Residual control can be maintained by using DDT in a 1 to 5% emulsion or suspension. Where DDT-resistance is met, a 2% chlordane residual spray outside or ¼ to ½% lindane residual spray may solve the problem. A new technique for dipping galvanized screen strips in a 15% dieldrin emulsifiable concentrate to give fly control is discussed more fully in the April, 1951, issue of *Pest Control*, page 20.

Stableflies (Stomoxys calcitrans): Approximately same size and color as housefly. Can be distinguished from houseflies by piercing mouthparts, which project forward from head. Males and females suck blood as chief food. Breed in stacks of straw or decaying grasses. Lindane and methoxychlor residual sprays have been found effective in controlling this species. A 50% DDT wettable powder sprayed on resting places will also give control.

Horseflies or tabanids (family Tabanidae): Size varies according to species; 1/3 to 1 inch long. Mostly black or brown in color. Wings often banded with brown. Eyes frequently brilliantly colored and banded. Both sexes blood suckers. Causes painful bite to humans and animals. Possible carrier of anthrax. Breeds in lakes, streams and wet areas of land. Pyrethrum with piperonyl butoxide sprayed at three-day intervals is said to protect both man and animals. Residual sprays have little effect. Larvicides can be used to good advantage on breeding areas.

Blowflies (family Calliphoridae): Most species are approximately same size as houseflies. Bodies of adult have metallic blue or green sheen. All species are scavengers. Breed chiefly on decaying meat, fish, garbage and increment. Eggs may occasionally be deposited on wounds of animals or man, causing painful condition known as myasis. When these flies are attracted indoors, standard pyrethrum sprays are a good control. Residual sprays are not too effective.

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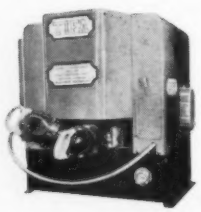

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Serving as executive director of the sanitation institute is Dr. Edward L. Holmes, former director of sanitation, American Institute of Baking. Thomas L. Huge is technical director.

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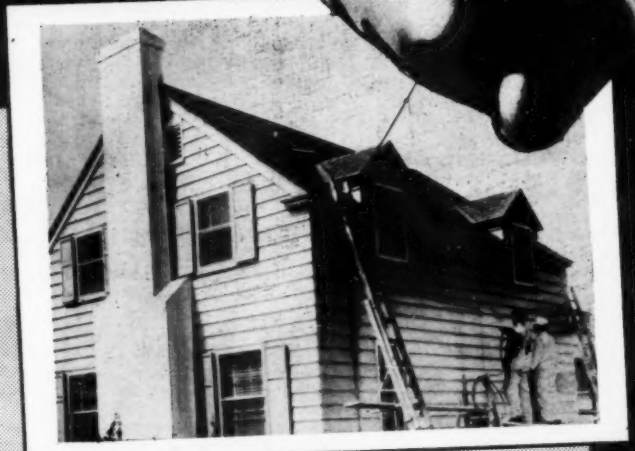

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patents

RELATING TO PEST CONTROL

By Dr. R. C. Roark
U. S. Department of Agriculture

Copies of all patents can be obtained for 25 cents (no postage) sent to the Patent Office, Washington, D. C. In ordering a copy of a patent the number of the patent, the date, the name of the patentee, and the subject of the invention should be stated.

2,541,637 (Feb. 13, 1951; appl. July 25, 1950). METHOD OF VAPORIZING LINDANE IN VENTILATED ROOMS. David H. Christopher, Levittown, N. Y., and Philip J. Spear, Amherst, Mass. — American Aerovap, Inc.—A room is kept free from flies by vaporizing lindane at the rate of 0.4 to 15 micrograms per hour per cubic foot of space.

2,541,681 (Feb. 13, 1951; appl. July 31, 1944). **RATTRAP.** Edward F. Andrews, Youngstown, Ohio.

2,542,341 (Feb. 20, 1951; appl. Feb. 14, 1947). **VOLATILE FUMIGANT PAD.** Fred H. Mayer, Portland, Ore. —This device holds naphthalene for destroying clothes moths in closets.

2,543,580 (Feb. 27, 1951; appl. Dec. 16, 1946). **SOIL FUMIGANT CAPSULE.** Wallace G. Kay, Grosse Pointe Park, Mich.—Ethylene dibromide is contained in a one-piece sealed rupturable gelatin capsule having a shell effective to resist vapor pressure of the fumigant until placed in contact with soil or other moist medium for a period of not less than a few hours and thereafter to rupture and permit the escape of the fumigant therefrom.

2,543,723 (Feb. 27, 1951; appl. March 7, 1947). STABILIZERS FOR DDT SOLUTIONS. John C. Hillyer and Charles W. Moberly, Bartlesville, Okla. — Phillips Petroleum Co. — A nonaqueous insecticide solution comprises from 25 to 30 weight per cent of DDT, from 0.5 to 1 weight per cent of at least one stabilizing material selected from the group consisting of sorbitan monolaurate, sorbitan monopalmitate, sorbitan monostearate, and polyoxyalkene derivatives of such sorbitan esters, and a petroleum solvent characterized by boiling in the range from 385° F. to 550° F., having a flash point of not less than 125° F. and having an aniline point of not more than 25° F., said insecticide solution being more stable to precipitation of DDT therefrom at a temperature of —10° F. than a corresponding insecticide solution consisting of the same amount of DDT dissolved in the same petroleum solvent.

2,544,093 (Mar. 6, 1951; appl. Apr. 20, 1948). **DEODORANT COMPOSITIONS.** Lowell B. Kilgore, Washingington, D. C. — Kilgore Chemicals, Inc., Washington, D.C.—A deodorant composition comprises a solution of lauryl methacrylate in deodorized kerosene, said solution being incorporated into liquid dichlorodifluoromethane.

2,544,234 (Mar. 6, 1951; appl. Feb. 19, 1948). **ANT TRAP.** Louis Magnesi, Walnut Creek, Calif.

2,544,475 (Mar. 6, 1951; appl. Nov. 28, 1949). **MOUSETRAP ATTACHMENT.** William A. Uttz, Fort Worth, Tex.

2,544,730 (Mar. 13, 1951; appl. Nov. 22, 1947). **ELECTRIC RATTRAP.** Edward W. Schulz, Rochester, N. Y. —Frank Keiper, Rochester, N. Y.; Elizabeth P. Keiper executrix of said Frank Keiper, deceased.

2,545,215 (Mar. 13, 1951; appl. Aug. 13, 1947). **FLY SWATTER.** William W. Sharpe, Detroit, Mich.

2,545,283 (Mar. 13, 1951; appl. Oct. 10, 1945). TERTIARY DIACYL AMINE INSECTICIDES. John R. Johnson, Ithaca, N. Y.—E. I. duPont de Nemours & Co., Wilmington, Del. — fly spray composition comprises a solution of pyrethrum and the n-butyl imide of 3,6-endomethylene-4-cyclohexene - 1,2 - dicarboxylic acid, the weight ratio of said pyrethrum to said n-butyl imide in said composition being at least 1/190.

2,545,287 (Mar. 13, 1951; appl. Oct. 10, 1945). TERTIARY DIACYL AMINE INSECTICIDE. James E. Kirby, Wilmington, Del. — E. I. du Pont de Nemours & Co., Wilmington, Del. — Certain imides, for example the n-butyl and n-amyl imides of 3,6-endomethylene - 4 - cyclohexene -1,2-dicarboxylic acid are effective synergists for pyrethrum when tested against flies.

2,545,772 (Mar. 20, 1951; appl. Sept. 1, 1949). **ANT TRAP.** Oliver W. Fisher, Sr., Baton Rouge, La.—one-half to Oliver W. Fisher, Jr., Baton Rouge, La.

2,547,084 (Apr. 3, 1951; appl. Apr. 15, 1950). **SPRAYING DEVICE.** James E. Marcuse, New York, N. Y. — West Disinfecting Co., Long Island City, N. Y.

2,547,094 (Apr. 3, 1951; appl. Apr. 26, 1949). **ELECTRIC HAND SPRAYER.** Hyman Richard Rich, New York, N. Y.—West Disinfecting Co., Long Island City, N. Y.

2,547,261 (Apr. 3, 1951; appl. Aug. 13, 1948). PEST COMBATING COMPOSITIONS. Max Geiger and Eduard Usteri, Basel, and Andreas Ruperti, Arlesheim, Switzerland—Ciba Ltd., Basel, Switzerland. — A dry pest-combating composition comprises as essential ingredients (1) a pest-combating agent, (2) a water-soluble copper salt of an alginic acid, and (3) a mixture of equivalent proportions of ammonium chloride and sodium carbonate, the said water-insoluble copper salt (2) and the said mixture (3) forming, in the presence of water, a water-soluble complex compound which when applied to a substratum yields an adherent film and when dried splits up into ammonia and the water-insoluble copper salt.

2,547,314 (Apr. 3, 1951; appl. Aug. 14, 1944). **INSECTICIDE CONTAINER.** Philip J. Grant, Oakland, Calif. —The invention relates to insecticide holders designed to be used outdoors and supported on the ground or other surface.

THE "202" MICROSOL

TOP QUALITY AEROSOL GENERATOR

Produces a large volume of fine aerosol particles instantly! Without using heat, steam or other propellant!

Where coverage took **hours** the new MICROSOL does it in seconds! Size of particles controlled by easy movement of a lever . . . from a fine, almost invisible fog to a wetting spray.

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Barton New Innis, Speiden S.M.

Appointment of Richard Barton as technical advisor and sales manager of their soil fumigants

Director of Speiden Co. sales, Richard Barton

and agricultural chemical specialties division is announced by Innis, Speiden & Co., New York City.

Barton, who previously represented the same firm in a sales capacity, attended New York University and the University of Hawaii.

Miller Chosen As Prentiss Head

J. Miller, treasurer of the Prentiss Drug & Chemical Co., New York City, has been named president of that firm. He fills the vacancy left by the death of former president H. R. King on January 28.

Miller will continue as company treasurer, combining the duties of both offices. He has been with the company since 1919.

Another Prentiss promotion goes to Friar M. Thompson, insecticide division manager, who has been elected to a vice-presidential post. Prior to his association with Prentiss, Thompson handled sales development and research for the Hercules Powder Co., Wilmington, Del.

Pomerantz Story In TV Play

Charles Pomerantz' discovery of a plague-carrying flea was celebrated on March 23 by the Philco Television Playhouse in an hour long documentary.

Called "The Best-Laid Schemes", the play described Pomerantz' efforts in determining the cause of rickettsialpox which baffled New York doctors, and threatened to spread rapidly in the metropolitan area.

Pomerantz is president of the Bell Exterminating Co., Inc., which has offices in New York City and Patterson, N. J.

Strong 1952 Demand Seen For Sprayers, Dusters

Despite restricted materials and supplies, demand for sprayers and dusters will continue strong in 1952. That is the prediction made by H. F. Brandt at the recent winter quarterly meeting of the National Sprayer & Duster Association in Chicago.

Brandt is chairman of the association's markets committee, which presented its annual outlook report at the conference. Barring all out war, the committee report concluded, materials and availability of equipment should improve appreciably as time goes on. But the big problem will be to obtain materials, complete fabrication and distribution and get them to users in time to meet their needs.

NSDA president R. B. Chapin told members "the industry has been especially alert to the replacement parts situation, and as a result needs for such parts have been taken care of with few minor exceptions."

Powell Buys Omaha Plant

Purchase of a new plant unit in Omaha, Nebraska has been completed by John Powell & Co., New York City.

The Omaha plant will manufacture 2,4-D, DDT, parathion, and toxaphene - chlordane emulsions. Production capacity of the new plant will be doubled within the next year.

John R. Stoddard, Powell & Co. sales manager, explains that Omaha was chosen as a location for expanding operations to facilitate insecticide supply to mid-western areas.

Court Hits FDA Inspection Power

Manufacturers of food, drugs and cosmetics cannot be compelled to open their factory doors to inspection by agents of the U. S. Food & Drug Administration. This decision comes from the U. S. Court of Appeals, circuit nine.

The judgment was handed down in the case of Ira D. Cardiff vs. US, involving interpretation of sections 331 (f) and 374 of the food, drug and cosmetic act. Section 331(f) makes it unlawful to refuse entry to an inspector, but section 374 states that for purposes of enforcement, officers must first make a request and obtain permission to inspect. According to the court's new decision, agents do not have to get permission for each inspection, but do have to obtain it for their initial entry.

FDA officials, obviously disappointed by the court interpretation, said no change in enforcement programs was planned at present, pending a final appeal to the U. S. Supreme Court. In the meantime, the appeals court's ruling is binding, at least in the ninth circuit.

Charles W. Crawford, FDA commissioner, says that if the decision is upheld in the Supreme Court, enforcement of the law "would be seriously handicapped and the efficiency of our operations greatly impaired.

"All of the provisions of the statute designed to protect consumer health and welfare are more effectively enforced through factory inspection," he continued. "Adulterations can more easily be detected by going into the plant and seeing what is done."

Crawford added that the small minority who refuse permission for inspection are, in almost every instance, undertaking to hide some reprehensible condition.

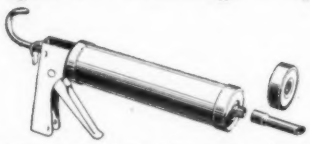
Fire Slows Hyman Production

Production of aldrin and dieldrin was dealt a substantial setback recently when fire of undetermined origin swept a large chemical building of Julius Hyman & Company, Denver, Colo. Estimated damage was $200,000.

Flames were confined to the Dowtherm boilers, adjacent equip-

Protect Buildings

from Pigeons - Starlings - Sparrows



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"Bur-Co" Bird Repellent is absolutely non-poisonous.. It also is safe to use on all surfaces, wood, paint, cement, stone, metal or brick.

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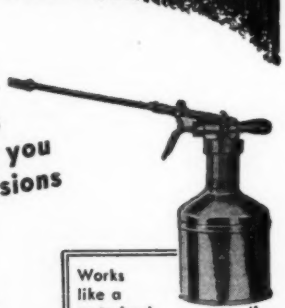

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- Interchangeable nozzles that give a fine atomized mist or strong spray.
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Works like a motorized machine yet has no cartridge compressor, air hose or motor.

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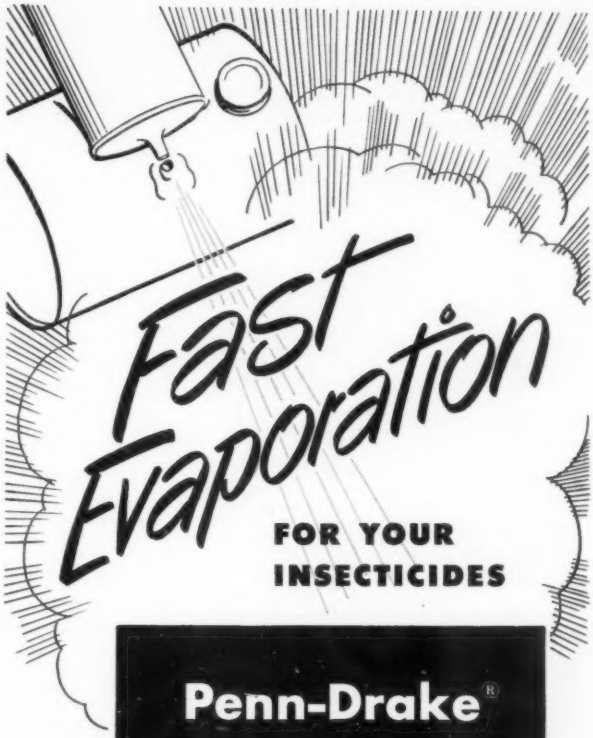

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Wherever fast drying and rapid evaporation are essential, you will profit in quality by basing your insecticides on Penn-Drake Super-Sol. This odorless, super-refined hydrocarbon solvent is the ideal base oil carrier for mothicides and in the preparation of DDT residual sprays. It also is highly recommended for use in odorless paints, home dry cleaners, metal parts cleaners and in other products requiring a high flash point.

SPECIFICATIONS

A.P.I. Gravity	53/55
Specific Gravity at 60° F	0.755/0.765
Saybolt Viscosity at 100° F	29.5/30.5 sec.
Flash Point C.O.C.	130/135
Fire Point C.O.C.	140/145
Initial Boiling Point	330/340
Distillation End Point	430/440
Unsulfonatable Residue	98%
Color	Water white
Odor	Practically none

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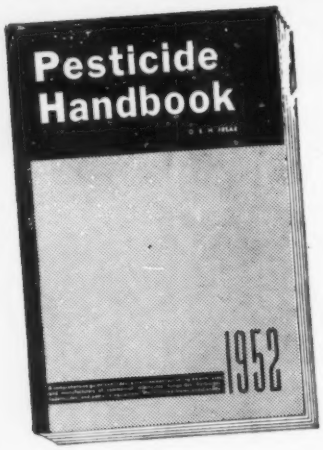

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You'll find a wealth of information on fungicides, insecticides, rodenticides, adjuvants, diluents, compatibilities, antidotes, and pest control equipment.

about the editor —

Dr. Donald E. H. Frear, Editor of PESTICIDE HANDBOOK 1952, is one of the leading authorities on the chemistry of pesticides. He is the author of "Chemistry of Insecticides and Fungicides," the first book dealing with this subject published in the United States. In addition, he has written several other books, including "Chemistry of Insecticides, Fungicides, and Herbicides." Dr. Frear is Professor of Agricultural and Biological Chemistry at The Pennsylvania State College.

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ment and organic chemicals stores. Since Dowtherm units are vital to Hyman & Co.'s insecticide manufacture, production will be interrupted pending new construction.

Company officials believe current inventories of aldrin will be sufficient to meet existing requirements. Shortages of dieldrin may develop, however, if the present shut-down is a long one. Julius Hyman & Co. is the exclusive manufacturer of aldrin and dieldrin insecticides.

Clover Mites In Denver

Denver housewives are considerably disturbed by an insect identified as the "red clover mite", which is said to show up in their homes in winter, according to a report made at the Midwest Shade Tree Conference in Chicago recently. The pest was described as seeking shelter in crevices and corners around window frames, usually on the south side of houses. From there they invade interior rooms, often in considerable numbers.

"What's the best means for their control?" was the question from the floor during an open forum session of the tree care specialists. Chlordane dust was recommended by one man and another suggested that parathion would be good, although hazardous to the user. A line of grease around window frames was a third proposal while still another "expert" simplified the problem with the assertion that a vacuum cleaner would settle everything.

During the conference the tree care men tackled some tough problems in control of insects affecting shade trees, but it would appear from this discussion that none of them qualified as structural pest control people, and what's more, they didn't know it, our reporter says.

Geigy Promotes White

C. L. White is the new regional manager of the southeast territory for Geigy & Co., New York City.

White has been Geigy & Co.'s southeast sales manager for the past three years. Before joining this firm, he was vice-president of White-Peele Co., Clayton, N. C.

DDT Not A Human Killer

No human deaths directly attributable to DDT have been recorded, except those which involved actual suicide attempts, says Dr. Francis F. Heyroth, assistant director of the University of Cincinnati's Kettering laboratory.

Commenting on the dangers of some of the newer insecticides, Dr. Heyroth noted that any substance which will kill insects will have some toxicity for mammals and man.

"It is generally agreed, however, that hazards associated with use of insecticides are far outweighed by their public health value," he said. Dr. Heyroth pointed out that in addition to increasing food supplies by destroying insects, insecticides prevent spread of many epidemic diseases.

Cincinnati University's Kettering laboratory has made extensive studies of possible dangers to humans through use of newer insecticides.

Armstrong To Dawson Post

New preventive sanitation consultant with C. Carl Dawson & Associates, St. Louis, Mo., is Archie E. Armstrong.

Armstrong, formerly with the sanitation department of the American Institute of Baking, is an entomology graduate from Kansas State College.

New member of Chemical Insecticide Corporation's sales and technical staff is **Byron A. LaForge.** He was previously associated with another New York firm, S. B. Penick & Co., where he served as a technical adviser and specialist in the agricultural and packaged insecticide fields.

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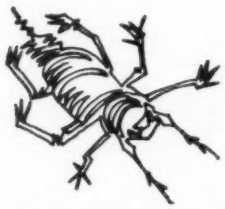

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The most potent insecticide may lose sales for you if not properly masked. Penick offers many superior masking agents, each skillfully compounded for unusually pleasing residual odor and full coverage.

NEW MOWN HAY #7627	3.00 LB.	MINT #7514	2.00 LB.
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LILAC #7455	3.60 LB.	PENVAL #7321	2.15 LB.
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Economical—they usually require only 1 pound per drum of finished insecticide!

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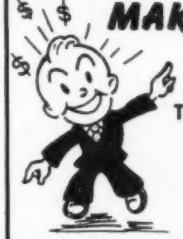

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Recognition for its role in supporting American-European efforts to strengthen free nations against communism has been given the Pennsylvania Salt Manufacturing Co., Philadelphia, Pa., by U. S. Economic Cooperation Administration.

Citing Pennsalt's efforts in furnishing technical assistance to the peoples of Marshall Plan countries, the government agency awarded the firm a certificate of cooperation and a letter of citation.

Working through its subsidiary, Pennsalt International Corp. the company's efforts in ECA's Productivity and Technical Assistance Program have consisted of cooperating with study teams brought here by ECA, opening plants and research facilities to inspection, sending qualified technicians to Europe in an advisory capacity and providing technical literature.

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RO-DETH, a ready mixed, ready to use rodenticide containing new, wonder chemical, Warfarin, is acclaimed by PCOs as "the best thing for rats and mice we have ever used".

- **New 100% long-range effectiveness**
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10 lb. Carton . . . $ 4.00 **30 lb. Carton . . . 9.60**
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Manufacturers and Distributors of Pest Control Products

Get 'Hoppers Early, Says BE&PQ

Spray grasshoppers early in their life cycle to get good control, is the advice of the Bureau of Entomology and Plant Quarantine, USDA.

Spraying while the 'hoppers are still hatching kills the insects before they can do much damage, and while they are still bunched near hatching grounds, usually weedy or grassy areas such as crop margins and pastures. Simple knapsack type spraying equipment is effective when dealing with young 'hoppers.

Best season for controlling small grasshoppers varies from May and early June in Texas, to July, August and early September in North Dakota.

Investigation by the BE&PQ has shown that three insecticides, dieldrin, aldrin and toxaphene give excellent control of this pest. Dieldrin produced the fastest results, toxaphene the slowest.

Temperature conditions are extremely important in controlling grasshoppers. Spraying should be done in daylight temperatures ranging from 80 to 90 degrees F. Extreme temperatures will reduce chances for effective control.

Respitory Protection Booklet

Detailed information on respitory protective equipment for all types of pest control operations is given in a booklet titled "Respitory Protection", issued by the Mine Safety Applicances Co., Pittsburgh, Pa.

Profusely illustrated with photographs and diagrams, this 28 page publication tells what type of gas mask or hood is recommended for specific jobs and how each piece of equipment is operated.

Dusting and misting respirators, as well as many different types of gas masks are given close, concise attention.

Mine Safety Applicances Co. maintains branch offices in most of the country's major cities. Copies of the booklet can be obtained by contacting one of these branches, or its main office located at Braddock, Thomas and Meade Streets, Pittsburgh 8, Pa.

Sprayer Has "Home" Appeal

Ideal for the stock shelves of retail-selling PCOs is the newly streamlined "Blizzard" hand

SMITH NEW STREAMLINE BLIZZARD CONTINUOUS SPRAYER

sprayer, produced by D. B. Smith & Co.

Equipped with a solid copper tank and a bright brass pump barrel, the sprayer is designed for home and garden use. Its long lasting, efficient qualities make the apparatus a must for householder's application, the company claims.

Descriptive literature on the D. B. Smith & Co. sprayer line can be obtained by writing the firm at Utica, N. Y.

Kolker Offers Pure Lindane

Commercial quantities of pure lindane are now being made available to manufacturers of insecticides by the Kolker Chemical Works, Inc., a subsidiary of Diamond Alkali Co.

Literature and price specifications are available from the company at 80 Lister Avenue, Newark 5, N. J.

Chem-Mite Fights Clover Mites

Many insecticides have been tried on clover mites and found wanting. Officials at the Chemical Insecticide Corp. say their new miticide, Chem-Mite, gives both quick initial kill and long residual action against this residential area pest.

One quart of Chem-Mite should be added to five gallons of water or oil for inside spraying, it is stated. Dosage for outdoor work is 2½ to 5 quarts concentrate per 100 gallons of water. Both mixtures are said to be effective against clover mite eggs and other mite eggs. Residual action is claimed to last six to eight weeks.

More information is available on this new miticide from Chemical Insecticide Corp., 57 13th St., Brooklyn 15, N. Y.

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PLACE HEADBAND WELL UP AROUND HEAD TO KEEP FROM SLIPPING DOWN
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. . . Weigh less than ½ ounce

Clean, cool, comfortable. Furnish excellent protection against non-toxic dusts except free silica. Replaceable cotton pads are inexpensive and sanitary.

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No. 1 Refills (standard wt.) .02 ea.
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Strikingly New and Different — the SCENT-FLO AIR FRESHENER is a proved best seller that's sure to be a standout. Guaranteed to give complete satisfaction — build new sales and also repeat business in refills. Prices are right for the customer — profits are right for the dealer. Can be easily handled on a rental or sale basis. Every customer you presently serve is a potential user of Scent-Flo.

ONLY SCENT-FLO CAN BE ADJUSTED TO MEET ALL AREA REQUIREMENTS

DEALER: If your business needs a sure-fire item, WRITE NOW for details.

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Here Is The Answer To Communist Charges Of Insect War-Fare

Red propaganda broadcasts from Peiping, China charge that UN airmen are dropping bombs loaded with disease bearing insects within communist lines. "This is fantastic nonsense" declared William O. Buettner, National Pest Control Association executive secretary, in an exclusive film interview with MovieTone News Service. Here is the complete text of Mr. Buettner's reply to the Reds' claims:

"I have read of the Communist charges that United Nations forces are waging insect warfare. They claim we are dropping bombs filled with spiders, flies and fleas carrying typhus and cholera, causing epidemics in Red territory. I have spoken with Dr. John B. Schmidt, entomologist at Rutgers University, and both of us agree that this is fantastic nonsense!

"First, let's take the spider—it does not transmit any disease. Secondly, fleas do not transmit either cholera or wartime type typhus. Thirdly, flies cannot live and propagate in the cold weather now prevalent in Korea. Besides, the heat created in firing a shell or the impact of a bomb dropped from a plane probably would kill any insect carried inside any type of receptacle.

"As for the disease mentioned, cholera is primarily a filth borne disease very prevalent in these countries. Cholera is most prevalent in war time, when everything is rubble or wreckage and where generally dirty or filthy conditions exist.

"Typhus is essentially transmitted by lice in war areas. This is one pest well known to any soldier in wartime.

"I think the Communists could make much better use of a sanitary engineer than a propagandist. If they would trade some of their guns for bath tubs, even their thinking would be cleaner and healthier."

Martindale Markets Masks

"Clean, cool and comfortable," is the way officials at the Martindale Electric Co. describe their new protective dust mask.

Designed to furnish protection against non-toxic dusts, with the exception of free silica, these masks are priced to suit economy-minded wearers.

Standard and heavyweight refills are available. Discounts are granted on volume orders.

Complete information can be obtained by writing the company at 1367 Hird Ave., Cleveland 7, Ohio.

Fumigant Applicator Withstands Hydrocarbons

Construction of a grain fumigant applicator which will stand the corrosive effects of chlorinated hydro-carbons is announced by the Dow Chemical Co., Midland, Mich.

Dow worked with Sherwood Brass Co., Detroit, in developing the new machine. J. L. Maxwell, manager of Dow's agricultural chemical sales department, says the packing and all parts of the apparatus will last indefinitely. He adds that accurate measurement of fumigant delivered is assured, and that installation reduces hazards connected with the hand-pouring of fumigants into a grain bin.

The new pump is not designed for farm use, but rather for large storage bins and terminals.

Fined For Harboring Rats

Rats in his building cost Robert Sercich $25. in fines at a Milwaukee, Wisconsin court hearing. One of his tenants claimed the rodents were so noisy at night neither she nor her family could sleep.

Health department inspector said the owner had been warned repeatedly to rat-proof his building, which has a grocery store and tavern on the first floor.

Ovotran Stops Mites

"Use of DDT and certain other insecticides to control flies, mosquitoes and some types of plant feeding insects, is usually followed by destructive infestations of plant feeding mites," writes O. H. Hammer in the Spring 1952 issue of *Down to Earth*, house publication of the Dow Chemical Co.

Hammer, who is with the firm's agricultural chemicals department, suggests that Ovotran, a Dow compound, can suppress mites when mixed with DDT or other chlorinated hydrocarbon insecticides. Recent tests in southwestern Michigan, he states, demonstrate it is possible to achieve both insect and mite control with combinations of DDT and K-6451 or Ovotran. The product is available in a 50% wettable powder.

When used in combination with some of the newer insecticides, Ovotran is said to give safe, effective control of insects and mites in recreation areas and around homes. Treatments of this type appear relatively non-toxic to plant foliage, with the exception of a few extremely sensitive plants such as the hardy privet.

More information on Ovotran and its use can be had by writing O. H. Hammer, Agricultural Chemicals Department, Dow Chemical Co., Midland, Mich.

Vaporizer Does Double Duty

Universal Electric Products Corp. is now marketing a combination vaporizer-deodorizer which controls flying insects and odors. The "double-duty" aspect should prove attractive to customers who want to solve both problems at once.

This machine is constructed of highly-glazed ceramic materials, fitting in well with any color scheme. In addition to vaporizing crystals containing lindane, it has two small wells containing chlorophyll tablets, which remove bothersome scents.

A one year company guarantee against faulty materials or workmanship goes along with the purchase.

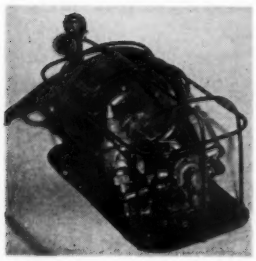
Further information can be obtained by contacting the firm at 2203 Regent St., Madison 3, Wisconsin.

WHO doesn't own WHAT?

WHO: The alert, profit-minded PCO who is aware that something is needed to turn break-even jobs into dollars-in-the-pocket.

WHAT: The most efficient labor-saver, the lowest in upkeep expense, the dollars-in-the-pocket equipment is . . .

The Junior PRESHUR-MITE



Ideal for all types residual spraying, moth proofing, roach and termite control work, etc. Compactly designed for easy handling. Will stand up under rugged treatment. Pressures up to 125 lbs. PSI and up to 2½ gals. liquid per minute. Weighs only 44 lbs.

Complete line of 5 Preshur-Mite models to select from. Electric or Gasoline powered. Priced from $145.75 to $361.86 f.o.b. Jackson, Miss.

WHY doesn't WHO own WHAT?

WHY: The PCO who doesn't own one or more PRESHUR-MITES either hasn't heard of its profit-making possibilities OR, he hasn't had the ready cash with which to buy one.

IF you haven't heard about it, write for information

IF you haven't got the cash, find out about our easy payment plan.

Another money-maker for PCO's is the EWING VAPORIZER . . . it's in this issue.

Ewing Manufacturing Co.

P. O. Box 1986 **Phone 3-0343**

Jackson, Mississippi

Loaded for bugs . . . with PENNSALT HI-GAM®

When you load your guns with Pennsalt Hi-Gam E-20, you know you're dealing death to bugs. This 20% lindane emulsion concentrate gives unusually effective control of flies, gnats, house spiders, silverfish and roaches. It also kills many DDT-resistant flies and certain other hard-to-kill insects—can be used for contact control of moths and bed bugs.

Hi-Gam E-20 may be used in homes, industrial buildings, dairy barns . . . in fact, it's excellent for use in most any building. So many and varied are the uses of Hi-Gam E-20 that its popularity among PCO's is growing rapidly.

Other Pennsalt Pest Control Products:

Hi-Gam® 99 for reformulators. Technical lindane, 99% or more pure gamma isomer of BHC in fine crystalline form. Ideal for making up solutions and emulsions of various concentrations.

Hi-Gam® W-25 Wettable Powder containing 25% lindane. Applied as a water suspension spray.

DDT Emulsion 34 (3 full lbs. DDT per gal.)

Penite 6® Concentrated sodium arsenite solution (9.46 lb. arsenic trioxide or 12.4 lb. sodium meta-arsenite per gal.)

Write for Pennsalt Service Bulletins on pest control work, or for information on prices and containers.

PENNSYLVANIA SALT MANUFACTURING COMPANY
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PENNSALT CHEMICALS
for Industry • Agriculture • Health • Home

PROGRESSIVE CHEMISTRY FOR OVER A CENTURY

See Insecticide Raw Materials In Good Supply

Most of the ingredients used in manufacture of insecticides are in good supply, officials of the National Production Authority have told the household, industrial, and dairy insecticides industry advisory committee at its latest meeting.

Only exception is pyrethrum, which remains in tight supply.

A munitions board representative told the committee that no plans are under consideration to release any pyrethrum from government stockpiles. The government plans to maintain stocks at their present level. Availability of allethrin has made it possible for the government to discontinue more stock-piling of pyrethrum.

Committee recommendations were that (1) NPA urge government agencies concerned with pyrethrum stockpiling to release some of this material for commercial use; (2) NPA raise its present limitation on use of tin containers for insecticides packed in quantities of less than one gallon from 70% of 1950 use to 90%, the present limit on containers of one gallon or more; and (3) NPA increase brass allocations for valves used on aerosol dispensers.

NPA officials pointed out in response that tin will continue to be short, despite expected imports from the United Kingdom, and that glass should be substituted for containers under one gallon size. Industry spokesmen claimed this change-over would not be practicable due to problems presented by equipment change-overs, packing and increasing shipping weight.

• **IT'S TIP-PROOF!**
The special flared skirt fits flush to floor all around...will not tip even if a rat steps on the edge of the container.

• **IT'S TESTED AND APPROVED!**
Tests show no signs of leakage of seepage after 18 days. Specifications call for 3 days.

• **IT'S SEAMLESS!**
One-piece construction, pressed into form under tons and tons of pressure from special water-resistant stock. Holds ⅜ fluid ounces.

• **IT'S STURDY!**

• **IT'S EASY TO PICK UP!**

• **IT'S A TIME-SAVER!**

• **BUILT-IN SAFEGUARDS!**
Distinct in appearance. No mistaking it...in shape...in color...and warning...poison and skull and cross bones symbols all over it.

• **MEETS RIGID SPECIFICATIONS!**
"Rat Jiggers" meet all specifications of Federal agencies and National Pest Control Association.

*Trade Mark Patent Pending

• **THE STANDARD FOR QUALITY AND SAFETY** as incorporated in Standard Safe Handling Procedure for Compound 1080 and other Liquid Poisons.

Packed 5000 to a case *Prices per 1000*

5 M-25 M . . . . . $5.62 M
Minimum orders 4 cases shipped prepaid.
Larger quantity prices on request.

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Street .....
City ..... Zone ... State .....

Chicago Bans DDT Near Milk

Dr. Herman N. Bundesen, president of Chicago's Board of Health has prohibited use of DDT in connection with milk production and distribution by farms and plants supplying milk to the city. He warned that violation of the order would result in loss of distribution permits.

Replying to Bundesen's order, a spokesman for the Associated Milk Dealers of Chicago said that to his knowledge, dairy farms and milk plants have not used DDT for more than a year.

Purdue Conference Report

(from page 28)

possible. Fitting a spot job to the customer's means may be a temporary kindness, but in the end he will wind up paying even more.

Panel members took turns in analyzing control problems within an average home. Stanford Crosby revealed that in older homes, furnaces were frequently set before concrete flooring, and that the best method of treating under these heating units is to drill the circumference area, angle in as sharply as possible and flood the entire area. Both chimneys and hot water tank flues, he warned, make ideal sources of primary infestation. Stumps and cisterns, always a knotty problem for termite operators, were also reviewed by the panel. W. K. Delaplane suggested that when stump is more than a foot away from the house, that only the soil be

CHLORDANE vs. TERMITES

IS YOUR PRESENT SOIL POISON DAMAGING PLANTS?

● In those situations where valuable plants may be destroyed by other chemicals, chlordane is especially suitable as a soil poison against termites.

Only LUCIDE S-60, a water miscible oil containing 60.3% refined grade chlordane, offers you **all** these advantages:

1. LUCIDE S-60 is made without any solvents. (Solvents may destroy plants).
2. LUCIDE S-60 wets soil, and has greater spreading action and penetrating power.
3. LUCIDE S-60 forms permanently stable emulsions in all dilutions with water. No need to agitate to insure uniform distribution of the chlordane.
4. LUCIDE S-60 is very economical to use. Makes a greater number of ready-to-use gallons than other concentrates.

NOTE THESE DILUTIONS!

1 gallon of LUCIDE S-60 plus water will make
- **40 gallons of 2% by wt. refined grade chlordane**
- **80 gallons of 1% by wt. refined grade chlordane**
- **160 gallons of ½% by wt. refined grade chlordane**
- **320 gallons of ¼% by wt. refined grade chlordane**

THESE LOW PRICES MEAN MORE PROFITS FOR YOU!

55 gal. lined drums	$10.85 per gal.
5 gal. lined drums	$11.35 per gal.
1 gal. glass bottle	$12.35 per gal.

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PEST CONTROL EQUIPMENT CO.

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VIRGINIA Chemicals

NATIONAL PEST CONTROL ASSOCIATION

VIRGINIA SMELTING COMPANY
WEST NORFOLK, VA.
DEPT. PC

FORMULATIONS RECOMMENDED

LETHALAIRE V-21 is a superpowered aerosol containing an extra quantity of Pyrenon,* the revolutionary new pyrethrins-piperonyl-butoxide concentrate. It outperforms ordinary aerosols in economy, speed of knock-down mortality.

V-21 is safe to use in the presence of food and food products, when used as directed. It leaves no tastes, odors or messy residues. It is unsurpassed for control of flies. This formulation is especially recommended for use in grocery stores, restaurants, hotels, hospitals, canneries, bakeries, bottling and dry cleaning plants, laundries, and for the clothing, rug and fur trades.

LETHALAIRE S-200 is a self-propelled residual spray containing a potent new insecticide, Lindane. The spray deposits an insecticidal film which retains its killing properties for many days. It is an excellent protection against flies (including DDT-resistant strains), fleas, ants, flying moths, and carpet beetles.

S-200 is ideal for treating outbuildings and exterior areas where flies gather—garbage disposals, dairies, kennels, around hotels and institutions. It is a valuable aid in the clothing, rug and fur trades.

LETHALAIRE was one of the first aerosols created expressly for industrial use. Lethalaire formulations are backed by a brilliant five-year performance record, are made in one of the best-equipped plants in the nation. You can depend on any formulation with the name LETHALAIRE.

*Reg. U.S. Pat. Off.—U.S.I.

treated between the stump and house. In treating the crack between sidewalk and foundation wall, the panel recommended that the intervening soil be thoroughly treated, and then sealed over, either with fresh cement or a coating of hot tar or pitch.

Dr. George C. Decker, chief entomologist, Illinois Natural History Survey, presided over the Friday morning session, which was opened with advice on "How To Teach Our Servicemen" by Ronald W. Hunt, president of the California Structural Pest Control Board. Hunt observed that "experience is still the best teacher, but that visual and oral education are most important." His personal feeling is that most universities will eventually have a regular course in structural pest control.

"Education for competitors," he declared, "is an excellent thing, for a well-trained PCO knows the value of the work he does." He urged employers to maintain a well-stocked library at the office, as well as a back file of *Pest Control* magazine and an extensive insect collection for visual identification. He then described the success of his own pest control correspondence course, sponsored by the University of California extension service, and advised delegates they could participate by requesting information on Agriculture course No. 810.

Putting his emphasis on a friendly but business-like approach, W. K. Delaplane then "sold" Harold Smitter on a termite job during a sample business interview.

P. E. Lull, professor of speech at Purdue, commented on the sample interview. "Just because a man can talk," he said, "doesn't mean he is communicating effectively. It doesn't matter so much what is said or who says it, but *how* it is done." Professor Lull proceeded to outline briefly his "Ten Commandments of the Business Interview": (1) be brisk, don't drag; (2) be modest, don't brag; (3) be poised, mentally and emotionally; (4) be decisive; (5) be interested in the other fellow; (6) be ruled by the office manners of the host; (7) don't waste time just to be pleasant; (8) don't waste time just to win an argument; (9) know the facts — both what you have and what other person wants; and (10) get best possible results for your firm — for instance, checking your customer's ability to pay before making sale.

Over-the-counter retail sales for pest control firms can help solidify goodwill and make profits, said J. R. Franklin as he led a general discussion on the merits of package sales for PCOs. Good location in a reputable business district was stressed as being important for volume sales. Franklin termed such business a healthy manner in which to meet people and understand their problems. He warned, however, that packaged insecticides should be sold by someone who thoroughly understands their use.

Eldon Behr, Chapman Chemical Co., delivered the final paper at this year's conference, speak-

(Concluded on page 56)

For a Sure

KILL

Asarco Brand

THALLIUM SULPHATE

For years the first choice of a multitude of PCOs in the control of pests and rodents.

1-4 lbs.	$13.00/lb.
5-9 lbs.	$11.50/lb.
10 lbs. or more	$10.50/lb.

All prices F.O.B. Denver, Colo., with transportation charges allowed to U.S.A. destination.

Prices subject to change without notice

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SMITH SPRAYERS

"THE DEPENDABLE PROFIT LINE SINCE 1888" — TO SHOW THEM IS TO SELL THEM

A COMPLETE LINE of hand, continuous, compressed air, knapsack, bucket, wheelbarrow and barrel sprayers. Also hand and crank powder insecticide dusters. We are the originators of sprayers and our products are of outstanding quality in engineering, modern design and performance.

Streamlined **BLIZZARD**
COPPER CONTINUOUS SPRAYER
The World's Most Beautiful Sprayer

Made in 2 sizes: Pint, Quart
World's finest continuous sprayer. Large, glistening solid copper tank. Pump barrel is highly polished brass seamless. Appealing, modern design. Sprays any liquid. Pint, Quart (39 ounce). Strongest construction. Extreme'y popular. A fast seller.

FLAME GUN SPRAYER
HUNDREDS OF USES
2000 degrees controlled heat. Destroys weeds, brush, rubbish. For burning safety strips and fire lanes. 4 gal. tank. 7 ft. oil proof hose. Light. Compact. Portable. Burns kerosene or range oil.

E-Z 5 GAL. KNAPSACK SPRAYER
Finest knapsack sprayer made. Pump lever develops high pressure easily while spraying. 5 gal. zinc-grip steel or copper tank. Tank is air conditioned preventing dampness reaching the back. Adjustable brass nozzle. (Recommended by Extension Services.)

SPEEDEX GARDEN & TREE SPRAYER

Solid brass. Large adjustable nozzle for spraying trees, shrubbery, flowers, weed killing, etc. Sturdily built. Low priced. In big demand.

D. B. SMITH & CO. 426 MAIN ST. **UTICA 2, N. Y.**
"ORIGINATORS OF SPRAYERS SINCE 1888"
SOUTHERN TERRITORY: BENJ. D. SMITH, JR., BOX 847, SANFORD, N. C
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SEND FOR CATALOG DESCRIBING THESE AND OTHER ITEMS

PEST CONTROL

notebook

The Bugs In Show Business

If a rodent or insect were running a classified ad for a home, the words he'd most likely use are "dark, warm, with plenty of available food and water." He'd only have to go as far as the nearest theater to find just what he's looking for.

Each year thousands of dollars are spent by theater owners to repair pest caused damage to expensive furnishings and equipment.

Here's a breakdown on the types and habitats of pests most frequently found in movie houses by PCOs:

Rodents: Rats and mice are the most common invaders. Heaviest infestations will occur in theaters located near food and meat markets, although they will enter any building where food and water are obtainable and where there is convenient harborage. Tunnels under flooring make excellent homesites. All electrical and telephone conduits, heating and water pipes should be inspected. Food is frequently delivered right to the rodent's doorstep when left-over popcorn and candy scraps are swept through unscreened return air vents. Pipelines, tunnels and ducts as well as back-stage areas should be cleaned periodically, and refuse swept up and burned.

Check Food, Water Sources

Check leaky faucets and pipe lines. These provide rats and mice with much needed drinking water. Also inspect candy stands, making sure food stores are well protected and elevated at least eight inches off the floor. Of course, original entry points must be watched carefully. It may be that rodents are entering through foundation cracks, doors not flush with saddles or floor surfaces, broken windows, etc.

Bedbugs: Theater seats are ideal for this oval-shaped reddish brown pest which also can frequently be found in arm rests, chair backs and crevices between upholstery and seat bottom. Lapped over corners of fabric, metal hat racks and seat vent openings also hide bedbugs as do loge divans, upholstered lobby chairs and rest rooms. White eggs and brown execreta are telltale signs of infestation.

Seats should be treated by spraying after the last show at night, or not less than five hours before the next day's first performance. An odorless, quick-drying, stainless solution should be used. Be careful that chemicals used contain no irritants. One theater operator had 300 lawsuits on his hands from patrons afflicted with burns of the arms and legs from wet seats sprayed with an inferior compound shortly before the first show.

Cockroaches: Most common domestic type, the German roach, invades theater restrooms, seats, furniture, drinking fountains, candy cartons, refreshment stands and vending machines. Largest of the family, the American roach, inhabits portions of the basement, such as the boiler room, coal bin, refrigeration machinery sites and other damp areas. Residual type sprays, applied at regular intervals, are needed for effective control.

Fleas and ticks: These pests enter theaters mainly by living agents; rodents, cats, dogs or human beings. Once inside, fleas or mites find their dark, warm surroundings excellent for breeding purposes. Eggs hatch on the floor, the larvae feeding on refuse under rugs. When full grown, they will attack any patron. Rodent eradication is the best method of eliminating these blood-sucking pests, as well as keeping all dogs and cats off the premises. Spraying with DDT, or dusting affected areas with naphthalene flakes or paradichlorobenzene crystals is helpful.

Moths: Perhaps the biggest bugaboo of theater owners, moths, as well as carpet and buffalo beetles can occur in rugs under heavy pieces of furniture infrequently moved for cleaning purposes.

Flies and mosquitoes: Elimination of breeding areas is the simplest method of removing flies and mosquitoes from a theater. Refuse dumps in the basement and around outside walls should be cleaned up, including such items as garbage, stagnant water, manure piles, etc.

Termites: Both subterranean and dry-wood types can inflict extensive damage to supporting wood members, base boards, floors and floor surfaces. Control recommendations, of course, must be based on the type and extent of infestation.

Abstracted from an article in the Theater Catalog, 1950-51, by Jacques J. Hess, New York City and distributed as a reprint by the National Pest Control Association.

Cyanogas Kills 5,000 Bats

Over 5,000 bats were killed recently in the attic of a northern California lodge with the use of Cyanogas, fumigant product of the American Cyanamid Co., New York City.

Handling the job were H. A. Wickens and Richard Thomas, entomologist, both of Montgomery Pest Control Co., San Francisco, Calif. The infestation is believed to have been at least 15 years old. Kill was accomplished with calcium cyanide dust, applied through a powder applicator. Eves around the house were then sprayed with a 25% aqueous suspension of water soluble DDT as a prophylactic measure. Recommendations were then made to the owner that he spread paradichlorobenzene crystals in the attic as a future repellent.

Dustfoe No. 55 Stresses Comfort

User comfort is the prime consideration in the design of Mine Safety Appliances Co.'s new dust respirator, "Dustfoe No. 55."

Weighing only 2¾ ounces, 25% less than previous models, the new breathing apparatus also features a 50% reduction in width of the filter holder, eliminating a blind spot area and greatly increasing downward vision.

Simplicity of construction and assembly throughout allows for quick changing of filters and easy replacement of parts, it is claimed.

Full details on the MSA "Dustfoe No. 55" are included in bulletin No. CM-14, available without charge from the company at Braddock, Thomas and Meade Streets, Pittsburgh 8, Pa.

last minute news . . .

Velsicol Wins Court Decision

On Monday, March 17, the district court for the city and county of Denver, Colorado, found that the insecticides aldrin and dieldrin are the property of the Velsicol Corp., Chicago, Ill. The decree was the result of a suit filed by Velsicol Corp. in 1949 against Julius Hyman & Co., Julius Hyman and others, for injunction and accounting. The latter firm is located in Denver.

The court found that the defendants have no right to produce, use or sell aldrin or dieldrin or any of their intermediates or derivatives.

The court enjoined Julius Hyman & Co. from the continued wrongful use and appropriation of secrets and property of Velsicol Corp., and ordered the defendants to forthwith assign the patent applications and patents covering aldrin, dieldrin and all intermediates and derivatives thereof, and related compounds.

Julius Hyman & Co. was also ordered to account to Velsicol Corp. for damages and profits. A special master was appointed to state the accounts, according to H. O. Whammond, Velsicol Corp. vice-president.

Emulsol Publishes Brochure

A complete list of the products developed and produced by the Emulsol Corp., Chicago, Ill., can be found in the corporation's new products brochure entitled "What Does Emulsol Make?"

Comprising compounds produced in the fields of food technology, agricultural chemicals and many other related fields, the booklet is available from the company's Chicago office at 59 E. Madison St., postal zone 3.

No PCO: Sulphur Blinds Tenant

An apartment house tenant in Newark, N. J. was temporarily blinded by fumes from burning sulphur candles recently.

The candles were lit by another tenant to clear her quarters of insects. She then left for work, leaving the candles burning.

Six other occupants of the apartment building were forced out before the vapors were finally cleared.

Entoma Gives Insecticide Listing

Up-to-date information on the effectiveness of current insecticides, antidotes for economic poisons, listings of pest control suppliers and a host of other valuable items fill the 450 pages of the 9th Edition of Entoma, directory of pest control materials.

Published by the American Association of Economic Entomologists, Entoma proves useful to all those directly or indirectly associated with the pest control industry.

Copies of this 9th and revised edition may be ordered from George S. Langford, Editor, Entoma, University of Maryland, College Park, Maryland. Price is $2.00 and checks should be made payable to "Entoma".

Aldrin Use Approved By USDA

The U. S. Department of Agriculture has put its approval on the use of aldrin to combat many types of soil insects which attack food products.

F. W. Hatch, agricultural products manager for the Shell Chemical Corp., New York City, says the government department's acceptance will increase yields and improve quality of vital food crops.

Hatch pointed out that aldrin kills rootworms, wireworms and white grubs with a far smaller dosage than any previously known compounds.

Julius Hyman & Co., Denver, Colo., is the manufacturer of this insecticide.

Typhus Suspected in L.A.

Los Angeles district health officers are investigating several reported cases of rat-borne typhus fever in their area. Officials say the disease-bearing rats were driven into homes by cold weather.

Home sprayer of **Root-Lowell Co.**

Root-Lowell Sprayer Display

Root-Lowell Corporation has come up with a novel display card enabling dealers to use their No. 256 Gard-N-Gro compression sprayer as its own counter display.

The colorful card is mounted on top of the sprayer, accenting the sales message with the product itself.

Root-Lowell Corporation's Gard-N-Gro No. 256 is a 1¾ gallon sprayer with pump and handy thumb latch spray control. It has an adjustable nozzle which give users a variety of spray-streams.

These counter cards plus a window spot display are shipped with three sprayers as a special merchandising offer. More information can be obtained by writing the company at 445 N. Lake Shore Drive, Chicago, Ill.

California PCO Convention

(from page 32)

fund, to be established at the California Polytechnic Institute. It will be called the Pencille Memorial Fund in honor of Chester Pencille, who developed a fumigation method for controlling drywood termites.

Special thanks went to convention co-chairmen James F. Clark and Charles L. Delk, whose organizational efforts made the smooth-running meeting a great success. This year's attendance topped all previous records for California PCO association conventions.

San Diego was tentatively chosen as convention city for 1953.

ACME

the Gas Mask that Checks

"HUFF *and* **PUFF"**

You can wear the Acme Full-Vision Mask two or three times as long as others without worrying about "huff and puff". An exclusive Acme feature, the Dead Air Check Valve, actually limits the amount of carbon dioxide the wearer rebreathes and thus helps to check breathing difficulties at their source.

This is another Acme innovation that proves that protection can be comfortable.

Write for the complete story on Acme Gas Masks for all pest control hazards.

ACME PROTECTION EQUIPMENT COMPANY

3037 West Lake Street, Chicago 12, Illinois

Senco

SENCO PHOSPHORUS PASTE

Commonly called rat and roach paste. A specific application for the larger species of roaches. Also an attractive and effective rat poison.

10 lbs.	$ 6.00	50 lbs.	$19.00
25 lbs.	11.00	100 lbs.	35.00

SENCO ARSENIC SOLUTION

A 9 to 1 Concentrate. One gallon plus nine gallons of water, makes TEN GALLONS of a toxic drink for the rats and mice.

One gallon $6.50 Five gallons $25.00

SENCO MICROFINE ARSENIC

Kills rats and mice. Three times more toxic than ordinary powdered arsenic.

10 lbs.	$6.00	50 lbs	$13.00
25 lbs.	9.00	100 lbs.	22.00

POISON GRAINS FOR MICE.

Strychnine or Thallium treated Canary Seed, Whole Oat Kernels, and other grains.

CHLORDANE FORMULATIONS

Oil Soluble or Emulsion Concentrates

FREIGHT PREPAID (In the U.S.A. Only)

2% Discount if check is sent with order.

Prices subject to change without notice.

Write For Complete Price List

SENNEWALD DRUG CO., Inc.

2721 Chouteau Ave. St. Louis 3, Mo.

A. F. C. QUALITY PRODUCTS FOR PEST CONTROL

Chlordane, oil concentrate, liquid emulsifiable concentrate, wettable powder concentrate, and ready-to-use liquids and powders.

Super Fluorex V, powerful insecticide powder

Sodium Fluoride

Poison Seeds

Pyrethrum and **DDT,** powders and liquids

Paradichlorobenzene

FOR EFFECTIVE RAT CONTROL

Phosphorous Paste

Rumetan (Zinc Phosphide)

Fortified Red Squill Extract and Powder

Antu and **Antu Tracking Powder**

Thallium Sulphate

Barium Carbonate

Arsenic White

FOR TERMITES

Orthodichlorobenzene, Creosote Oil, Sodium Arsenite Powder, Pentachlorophenol Concentrate

Write for particulars and prices

AMERICAN FLUORIDE CORPORATION

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WOOD PRESERVATIVE

for TERMITES and POWDER POST BEETLES

Backed By 19 Years of Acceptance

Ready-to-use **Effective** **Economical**

Penetrates wood quickly • Requires no mixing • Does not stain wood or painted surfaces • Remains active for years • Control moisture that causes mold and decay • Safe and easy-to-use • Requires no mask

Exclusive Franchise available to responsible PCOs

Send Us Your Orders For PENTAchlorophenol Concentrate 1 to 10

The VACCINOL Products Corporation

P. O. Box 3205 Phone 9-1166 Memphis 9, Tenn.

organization news

Kansas Conferees Focus Attention On Business, Sales

Setting their sights on better customer relations, members of the Kansas Termite & Pest Control Association held their spring meeting at the Stillwell Hotel, Pittsburg, Kansas, March 1-2.

First program speaker was Clair Williams of the Metropolitan Life Insurance Co., who revealed the "gimmick" in successful salesmanship. C. M. Sandstrom, secretary-manager of the Kansas Retail Grocers Association then gave his views on what retail grocers expect from pest control operators.

Telephone courtesy, proper use of the telephone in sales, and ethical advertising were reviewed during the afternoon session. C. C. Blackburn, Pittsburg branch manager of Southwestern Bell Telephone and Ralph Hinman, manager of Wichita Better Business Bureau, led discussions.

Again touching on pest control in food establishments, H. L. Wortz, representation of the Kansas Restaurant Association, outlined the need for insect and rodent control by restaurant owners.

Concluding the two-day meet, Professor Kenneth Hillier of the Business Administration Department of Kansas State Teachers College gave PCOs hints on how to cut down operational costs.

Exner Missouri PCA Head

William F. Exner, Termite Control Co., Webster Groves, has been voted 1952 president of the Missouri Pest Control Association.

At their regular quarterly meeting, members also named Norman C. Huffman, Sedalia, vice-president, and Miss Lea A. Sain, ABC Exterminators, St. Louis, secretary.

New directors are A. J. Danella, Acme Exterminators, Kansas City, George L. Gargis, Continental Exterminators, St. Joseph, Lawrence D. Landry, W. B. McCloud & Co., St. Louis, and O. M. Weigle, Fulton.

Next association meeting is tentatively set for May 17. A two-day short course is being scheduled at Missouri University in November. Dates and program will be announced later.

Association secretary Lea A. Sain asks that applications for new membership be directed to her at 3925 Potomac St., St. Louis 16, Mo.

Rodents, Wood Destroyers Highlight Iowa Short Course

Urban rodent problems and control of wood destroying insects featured the annual Iowa Pest Control Association short course, held March 6-7 at Iowa State College in Ames. More than 50 PCOs attended.

First day discussions centered around identification and control of stored grain insects. Dr. J. A. Slater of the university entomological staff conducted a laboratory identification test. Kenneth R. Lennington, representative of the U. S. Food & Drug Administration, then surveyed the problem of rodent and insect food contamination. He warned his audience about the toxological hazards of spraying uncovered foods, or placing poisoned rodent baits in open spaces.

Harold Gunderson opened the second day sessions with a general review of rodent poisons. Delegates held an open forum discussion on urban and rural rat control problems, stress being placed on costs and fair profit margins.

"What problems do termite operators face?" was the question put to conferees at the last afternoon session. Dr. E. P. Sylvester spoke on wood rotting fungi. Dr. J. A. Slater answered identification questions in his talk on "What structural insects am I fighting?" Selection of proper soil poisons was covered by Harold Gunderson.

Vern Walls, Modern Pest Control, Inc., Cedar Rapids, was named as 1952 president of the Iowa PCA at a business meeting held during the conference. Former secretary Chris Blohm, Atomic Pest Control Service, Ottumwa, is new vice-president. Joseph Lipshie, Hawkeye Exterminating Co., Des Moines is treasurer, and William Lustfield, Brookfield Pest Control Co., Davenport, is secretary.

Fall meeting of the association has been set for September 25-26 in Sioux City.

Seale New Orleans PCA Choice

William Seale, Seale Pest Control Corp., has been elected 1952 president of the New Orleans Pest Control Association.

William Merdes is new vice-president, and Joseph Mandlebaum, United Chemical Co., is secretary-treasurer.

CALENDAR OF MEETINGS

Purdue University 3rd Annual Insect & Rodent Control Conference, West Lafayette, Indiana, Apr. 1-2.

Communicable Disease Center, Field Training Course in Insect Control, Atlanta, Ga., Apr. 7-18.

National Agricultural Chemicals Ass'n, Spring Meeting, Fairmont Hotel, San Francisco, Apr. 7-9.

New York PCA "Dutch Treat" Luncheon, National Republican Club, New York City, April 15.

New England Home Show, Mechanics Building, Boston, Mass., May 3-11.

Tenth Annual Canadian PCO Conference, University of Montreal, Montreal, Canada, May 12-14.

Texas PCA Quarterly Meeting, Waco, May 17.

Missouri PCA Meeting, (place to be announced) May 17.

Georgia PCA Spring Meeting, Albany, Ga., May (exact date to be announced).

Chemical Specialties Manufacturers Ass'n, 38th Mid-Year Meeting, Hotel Copley-Plaza, Boston, Mass., June 8-10.

Manufacturing Chemists Ass'n, Annual Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., June 23-24.

Forest Products Research Society, Annual Meeting, Milwaukee, June 23-25.

National Ass'n of Sanitarians, Annual Meeting, Shirley-Savoy Hotel, Denver, Colo., Sept. 2-5.

Iowa PCA Fall Meeting, Sioux City, Sept. 25-26.

National Pest Control Assn. 20th Convention, Rice Hotel, Houston, Texas, Oct. 20-22.

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Stops and prevents termite entrance from parent soil colony. Used for treating foundation timbers, infested beams and sills. A gray powder—soluble in water or applied in dry form. Contains 75% arsenic pentoxide, killing ingredient.

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Concentrated sodium arsenite solution. One gallon is equivalent to 5.33 pounds of Sodium Arsenite in dry form. Used with equal effectiveness as a water-mixed solution.

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CHIPMAN CHEMICAL COMPANY
DEPT. T, BOUND BROOK, NEW JERSEY

PERSONAL BRIEFS

Most of our peeping was done in California where they've just completed another social and educational meeting . . . John Roach, owner of Beverly Termite Control Service, Los Angeles, was a guest on Groucho Marx's coast to coast TV show a short time back. While Groucho commented with his usual insolence on the point that a man with the name of Roach was in the exterminating business, John Roach was able to even matters by pocketing $136 by correctly answering questions . . . A. W. Rurup, "Gus", of Atomic Termite & Wood Pest Co., El Monte, has sold his business to George Evans, a former employee of New Method Termite & Pest Control in Pasadena. Gus is retiring to an orchard in the great Northwest. We knew there was money in this business. Now look what you can plan on! . . . Don Eason of the Eason Co., Glendale, is recuperating from a heart attack. Take it easy, Don, follow the doc's advice and you'll be as good as new soon. . . . Mr. Ken and Mrs. (Babe) Scott of Termite & Pest Control Co., Glendale, recently entertained Mr. and Mrs. Jack Warner. Mrs. Warner is well known to our industry as the former Jule Hicks, who was Ken's office manager. Bet Jule had to answer a lot of questions on details Ken never had to bother about before. You're in for more dinners, Mrs. Warner . . . From Denver comes a news story that two former underworld kingpins, Eugene (Checkers) and Clyde (Flip Frog) Smaldone have gone into the pest control business. The *Denver Post* says they're working through Raymond Todd who quit his well-paying serviceman job with a long-established local PCO to go into business for himself with the Smaldones as backers. The paper says, Todd's "best salesmen are the Smaldone brothers themselves. They don't high-pressure. They simply walk in on a small merchant and say, 'We'd like your exterminating business.' The merchants know the Smaldones. They don't argue." They've even got $20,000 public liability and property damage insurance from one of the most reputable insurers in Denver. "Police officers are watching the situation carefully" says the *Post* . . . "30" for this month!

Purdue Conference Report

(from page 52)

ing on the use of wood preservatives. His complete paper will appear in a forthcoming issue of *Pest Control* magazine.

Five 16 Year Men At Banquet

Five men were named by Professor J. J. Davis at the Thursday night banquet as having been present at all 16 Purdue conferences. They include William O. Buettner, C. Norman Dold, Harlem B. Ives, W. W. Scott and Jules Smith. Ten year awards "in recognition of 10 years of faithful attendance" were given by Professor Davis to: Richard Barnett, Herman Jordan, William Norton, Theodore Oser, Oscar Potter, Russell Clark, Charles Denny, and Henry Isherwood. Principal speaker at the banquet was Judge W. Lynn Parkinson of the Tippecanoe County, Indiana circuit court, who outlined "Some Good American Philosophy."

22 Exhibitors Present

Twenty-two exhibits by individuals and industrial concerns were shown continuously in the entomology exhibit room in Purdue's Memorial Union building. David L. Schuder, assistant in entomology at Purdue, was in charge of the exhibits. On the walls were a generous display of Professor J. J. Davis' collection of insect and pest control cartoons. Other displays included: *Exhibit 1:* Insect buttons gathered by Dr. George E. Gould; *Exhibit 2:* Commemorative insect stamps collected by Dr. B. E. Montgomery; *Exhibit 3:* Pyrenone grain protectants, U. S. Industrial Chemicals Co.; *Exhibit 4:* "Big Stinky" outdoor fly trap, W. E. Brown, Dioptron Co., Milwaukee, Wis.; *Exhibit 5:* Hydrex spray unit and Pestron aerosol projector, Robert Loibl, Pest Control Products Co., Los Angeles; *Exhibit 6:* Acme Protection Equipment Co., Chicago; *Exhibit 7:* Live and mounted insects, examples of insect damage, Purdue Entomology department; *Exhibit 8:* Kil-Jet Fog Generator, Kil-Jet Distributing Co., Cleveland, Ohio; *Exhibit 9:* "Rat-Case," "Poison H2O Kit," Stainless Steel 1 gal. sprayers, "Ro-Deth," B & G Co, Philadelphia; *Exhibit 10:* Pest Control magazine; *Exhibit 11:* Pistol-type sprayer, Idico Products Co., New York City; *Exhibit 12:* Gallant Termite Barrier, West Newton, Mass.; *Exhibit 13:* Cyanogas fumigant, American Cyanamid Co., New York City; *Exhibit 14:* "Vapo-Swat", insecticidal vaporizer, Vapor Chemical Co., Brecksville, O.; *Exhibit 15:* Two new electric residual applicators, Pest Control Equipment Co., New York City; *Exhibit 16:* Termite infested ming tree, Wil-Kil Co., Milwaukee, Wis.; *Exhibit 17:* Private label aerosol bombs, Protective Coatings Corp., Des Plaines, Ill.; *Exhibit 18:* Protective equipment, Mine Safety Appliances Co., Pittsburgh, Pa.; *Exhibit 19:* Caulking compounds, adhesives, Miracle Adhesives Corp., New York City; *Exhibit 20:* Plug-in searchlight, Unity Mfg. Co., Chicago, Ill.; *Exhibit 21:* Insecticide sprayers, H. D. Hudson Co, Chicago, Ill.; *Exhibit 22:* Innis, Speiden & Co., New York City.

CLASSIFIED ADVERTISEMENTS

When answering ads where box number only is given, please address as follows: Box number, c/o Pest Control, 1900 Euclid Building, Cleveland 15, Ohio.

Rates: "Position Wanted" 5c per word, minimum, $1.00. All other classifications, 10c per word minimum $2.00. All classified ads must be received by Publisher at least two weeks preceding publication date and be accompanied by cash or money order covering full payment.

WANTED MANAGERS

For branch offices. Rapidly expanding pest control firm requires high-type men to manage offices. Must have initiative, sales ability and forcefulness. Prefer graduate entomologist with practical experience. Will also consider applications from men now in the pest control field, who possess good education, sound technical and business background. Excellent opportunity to become associated with progressive organization enjoying solid financial position. Salary and percentage. Submit complete data: age, education, experience and other pertinent details, together with photo. All replies strictly confidential. Mr. L. L. Crosby, President, Commonwealth Sanitation Co., 3567 Bigelow Blvd., Pittsburgh 13, Penna.

WANTED
CHEMIST - ENTOMOLOGIST

Outstanding man to head service department of large, rapidly expanding pest control firm with home offices in Pittsburgh and branches in 18 cities. Candidate should have seasoned experience in insect toxicology, economic entomology and field work. This is an important position for a man possessing managerial ability Plus. Salary commensurate with ability and experience. All replies strictly confidential. Submit account of academic and professional training, past affiliations, earnings, photo and any other pertinent facts to: Mr. L. L. Crosby, President, Commonwealth Sanitation Co., 3567 Bigelow Blvd., Pittsburgh 13, Penna.

WANTED TO BUY

Will buy your surplus methyl bromide and cyanide discoids. Oser Exterminating Co., 822 14th St., Denver, Colo.

FOR SALE

120 gallons Penick "Pyrexcel 20" oil solution in 30 and 15 gallon drums. One 1949 Tifa Fog Unit complete with 2 hose sections, hose bracket and insecticide tanks. Excellent condition. Write Kentucky Dealers Equipment Co., Inc., 110 Cannons Lane, Louisville 6, Ky.

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Follow the Crowd With PER-MO Profits

★ **NOW Per-Mo Warfarin for Rats & Mice**
Packed in 1 lb., 4 lb. tin containers

★ **Per-Mo 5 Year Guarantee Moth Proof Liquid**
Packed in Pints, Quarts, ½ gals., gals., and 5 gal. containers

★ **Per-Mo Flameproof Liquid**
Packed in Gallon containers or in Drums

★ **Per-Mo Rat & Mice Liquid**
Packed in 8 oz. bottles or in gallon containers

★ **Per-Mo Rat Bits Made With Red Squill (Fortified)**
Packed in 4 and 16 oz. containers or in Bulk

★ **Per-Mo Rat Paste, Made With Red Squill (Fortified)**
Packed in 4-8-16 oz. jars, and in Bulk

★ **Per-Mo Rat Paste, Made With Antu**
Packed is 4-8-16 oz. jars, and in Bulk

★ **Per-Mo "Chek" Deodorant**
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'NO ROOST'

Imitated by others, equalled by none.
Water repellent, will not melt in extreme heat

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The Simple, Economical Way to Eliminate Bird Roosting

GROSLEY'S "NO ROOST" IS

POSITIVE: It is a physical impossibility for birds to roost in the area where formula is applied.

ECONOMICAL: It eliminates needless expense in building maintenance, in keeping ledges, roofs, sills, etc., free from bird mess. One gallon is enough to bird-proof 150 running feet.

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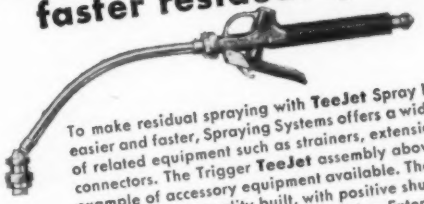
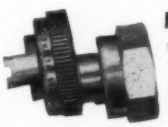


To make residual spraying with **TeeJet** Spray Nozzles easier and faster, Spraying Systems offers a wide range of related equipment such as strainers, extensions, and connectors. The Trigger **TeeJet** assembly above is one example of accessory equipment available. The Trigger **TeeJet** Valve is quality built, with positive shut-off and lever lock-catch for easy open operation. Extensions are supplied straight or curved in lengths up to 48".



MulTeeJet TIP ASSEMBLY

Here is a handy nozzle assembly that provides four different sprays in one nozzle assembly. The head of the nozzle rotates and indexes to four positions . . . each position giving a different spray. The MulTeeJet Tip Assembly fits the Trigger Valve or will fit any connection used for **TeeJet** Nozzles.

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SPRAY NOZZLES

WRITE FOR BULLETIN 58
for complete information on **TeeJet** Spray Nozzles and related equipment for residual spraying.

pestales

Poem (?)

Maybe we should never have printed Ira Hatfield's poem in March. Seems it inspired others to put pen in hand to write blank verse. Here is the latest example of said type of prose by Art Davis, Dayton, Ohio PCO:

Here's to the bugs
That hide in the rugs
and eat all the nap away
I think they are nice
and i love the mice
because that's how
I get my pay.

Had enough?

* * *

Food For Thought

Court house clerks in San Antonio have finally caught up with a fabulous rat, nicknamed "the baron," who infested their offices. At first the rodent gained the fancy of employees by his bold, dashing gallops through the main halls. Workers frequently left food out for him. But "the baron" spurned such things as fresh meat, and began nibbling away at ledgers in the district clerk's office. After his death, it was estimated he had digested more legal decisions than most attorneys.

Living off the record, apparently.

* * *

Survival Of The Fittest

Female cockroaches, so the report is going around, are far less susceptible to insecticides than their male counterparts. This fact is reported by S. Wolfgang Stummerdorf, in charge of our Significant Matters Dept. Wolfgang thinks this proves once and for all that the female of the species is stronger and more resistant than the male. Which is, of course, pure nonsense! We have it on good authority that—oops—there's the phone . . .

. . . Yes, *dear* . . .

* * *

Rats In Pants

Roy Watkins, a policeman, was hopping mad. He had one boot off and was trying to take off his raincoat while dancing from one foot to the other. To curious citizens, he growled, "there's a dern rat in my britches."

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"Big Stinky"

(from page 20)

nearest dwelling. Little objection to odor has been met when the traps are placed among clusters of garbage cans. It is occasionally desirable to protect "Big Stinky" with an anchored steel lattice or expanded metal, to allow some free circulation of air past traps. Be careful not to hang the trap too high. This will break the scent stream, and smaller flies will simply be blown away.

"Big Stinky" is most effective when placed in a sunny spot right on the ground. Food processing plants often locate them directly under truck loading platforms. Low shrubbery in parks and around institution buildings make ideal anchors. Often these traps can be secluded in dense shrubbery, and burial of dead flies can take place on the spot. The manufacturers strongly recommend immediate burial of dead flies, at least six inches deep.

Flies Cannot Become Resistant

Perhaps one oustanding feature of this fly trap is the insect's inability to become resistant to it. Trapped flies cannot propagate, since they cannot escape.

Inventor Brown does not make excessive claims for his "Big Stinky" fly trap. He points out that it does not normally catch mosquitoes or certain species of blood-sucking flies. Although a single trap may catch large numbers of flies, it takes several "Big Stinkys" to do a satisfactory job.

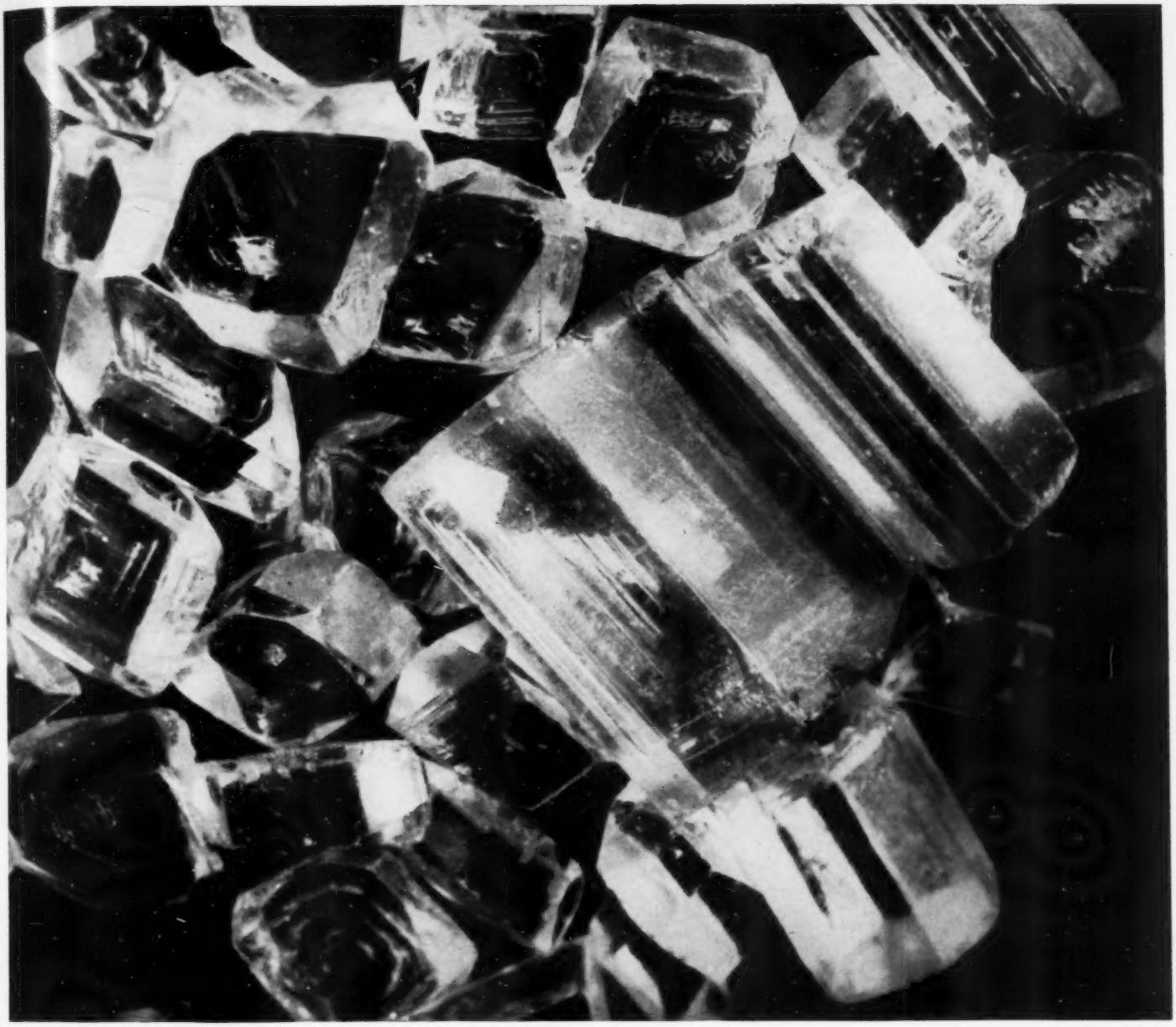
For community fly trapping projects, one to three 2-quart units per city block in residential areas have given satisfactory results, while gallon size units have worked out well for industrial and farm areas. A minimum of six of the latter are recommended for rural locations. Various methods of servicing community network traps have been tried. Most successful thus far has been that of paying operators on a per-quart-of-flies-emptied basis.

Here is some test data on "Big Stinky's" effectiveness, taken from two suburban residential areas around Milwaukee:

June - September, 1951

	Pewaukee	Germantown
Area covered (app. sq. miles)	¾	1/3
Number of traps	50	22
Quarts of flies emptied	536	354
Quarts per trap	10.7	16.1

Literature and additional information on the "Big Stinky" fly trap is available from its manufacturer, the Dioptron Co., P. O. Box 1313, Milwaukee 1, Wis.



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LINDANE is a new product of DIAMOND ALKALI's subsidiary, KOLKER CHEMICAL WORKS, INC., specializing in organic chemicals for agriculture and industry. *Write today for prices and specifications on* LINDANE *to:*

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LINDANE, the effective multi-purpose insecticide containing 99% gamma isomer of benzene hexachloride is now available in commercial quantities. LINDANE, together with KOLKER high gamma BHC technical, now offer manufacturers basic BHC materials easily handled and readily formulated into high-quality finished insecticides.

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Chemicals you live by

Performance Proves Their Worth!

CUT COST! SAVE TIME!

STAINLESS STEEL TANK TYPE SPRAYER . . .

A 2¾ gallon stainless steel unit that is built for service! Economical and efficient in operation. CHECK THESE FEATURES: All mechanical seals — no soldered inlets — leak-proof valve gives clean shut-off — has Koroseal washer — accurate pressure gauge with unbreakable crystal — stainless steel 2¾ gal. tank and pump by Hudson. Renewable hose end adapters — 5 ft. PCE oil-resistant hose ¼" I. D. — 18" PCE extension wand — fan pattern spray nozzle — Knapsack type web strap.

2 QT. RESIDUAL APPLICATOR

Here's a lot of sprayer for the money. Chrome finished all brass tank. Easy to clean. Professional in appearance. Has top-mounted easy-to-read pressure gauge with unbreakable crystal. Easy top fill. Check valve prevents dripping or accidental discharge when extension is removed. No soldered inlets. ALL MECHANICAL SEALS WITH OIL AND CHEMICAL RESISTANT RINGS. Can be operated with one hand.

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HOSE: Long wearing, light in weight, PCE hose is kink-resistant and oil-resistant. Available from stock with or without fittings in ¼" and ⅜" diameter.

PLASTIC PINTS: End bottle breakage. PCE plastic pints won't break, chip, shatter, burst in winter if emulsions freeze, soften or deteriorate. Very professional looking — low in cost.

VALVES: Standard on all PCE equipment, but will make **any** equipment better. Provide clean, quick on-off operation. Drop forged brass. Lifetime Koroseal washers. Special oil-resistant washer eliminates graphite cord packing. Have strong, sturdy spring.

CASES: A complete line of sturdy, professional-appearing service cases.

We will be glad to quote you prices by return mail on any of the items listed above. We also suggest that you

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of our many money-saving, labor-saving items for the PCO